Operation Manual
EDP Handling Systems

As of: 2014-07-21

1 Contents

2 Introduction

With our EDM modules we have provided an essential step towards reaching short cycle times.
This operation manual is subject to our efforts to present all important information in a short and understandable way. If there are still any questions left, please, do not hesitate to contact us.
We will also appreciate your suggestions.
We wish you great success in integrating our devices to your machines or plants.

3 Safety Guidelines

3.1 *General Safety Guidelines*

The pick-and-place devices EDP are built state-of-the-art and according to the acknowledged safety-related rules, and they should only be used

- for the intended purpose and
- in perfect condition concerning safety.

3.2 *Regard the Hints in the Operation Manual!*

It is a condition for the safe operation and an operation free of any disturbances of the pick-and-place devices EDP to know the basic safety instructions.

Each person dealing with the assembly, commissioning, maintenance and operation of the pick-and-place devices EDP must have read and understood the complete user manual, especially the chapter about the safety guidelines.

Additionally, the rules and instructions for accident prevention (UVV) valid at the place of action / operation have to be regarded. In case of improper use dangers for life and health of the users or a third party respectively impairments of the plant or other material assets might occur.

In any case of disturbances which might effect the safety the plant has to be stopped immediately and saved against a restart. Afterwards the disturbance has to be abolished immediately.

All works at the devices have to be executed under pressure- and power- free condition.

For the operation of the devices the user must provide protective covers, safety doors or other safety precautions which comply with the usual safety guidelines and safety norms which prevent the presence of persons in the working room the devices are placed during their operation. The devices may principally only be set into operation when the protections are closed

3.3 *Protection Against Dangerous Movements*

Dangerous movements can occur when drives are started inaccurately. The drive parts are controlled in a way that a malfunction can mainly be excluded. Although, due to reasons of personal protection, the danger of injuries as well as of dangers to damage material it may not solely be trusted upon that. Until in-built controls get effective, incorrect drive movements have to be expected.

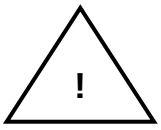
3.4 *Explanations of Symbols and Hints*

For the quick understanding of this instruction and the safe handling of the EDM- modules, the following warning hints and symbols are used:

3.4.1 Warning hints

Danger
This symbol refers to a directly threatening danger which can – if the safety regulations are not regarded – lead to the death or a personal injury.

Warning
This symbol refers to a possibly threatening danger which can – if the safety regulations are not regarded – lead to personal injury or serious material damages.



Attention
This symbol refers to a possibly threatening danger which can – if the safety regulations are not regarded – lead to material damages.

3.4.2 Symbols

INFO

Information hint
This symbol stands for information that contributes to a better understanding.

4 Product Description

4.1 *Intended Use*

The pick-and-place devices EDP are used in automation systems and are only applied for the movement of work pieces.

The pneumatic modules are only purposed for an operation by means of compressed air (4.7 bar). Each other use extending this is regarded as use other than for the intended purpose.

The electrical axes are solely purposed for the operation with original LinMot components (controller, cable …). Each other use extending this is regarded as use other than for the intended purpose.

The compliance with the specified assembly - and dismantling instruction, the maintenance - and repair conditions as well as the compliance with the specifications given in the data sheets also belong to the intended use.

4.2 *Warranty and Liability*

Principally, the “General Sales and Delivery Conditions“ of e·p·s GmbH are applied. Warranty- and liability claims in regard of personal or material damages are excluded if they are related to one or several of the following causes:

- Use outside the intended use
- Improper assembly, start-up and maintenance
- If work pieces are moved manually while the power supply is connected
- Running of the pick-and-place devices EDP with defective and/or inoperable safety - and protection facilities
- Disregarding the hints in the operation manual regarding assembly, commissioning, operation and maintenance
- Non-observance of the EG- machines directive, the Accident Prevention Regulations (UVV), the VDE guideline as well as of the safety - und assembly hints
- Unauthorized changes of the construction
- Deficient supervision of wear parts
- Improperly executed repairs
- Disaster situations caused by influence of foreign objects and force majeur

Unless otherwise agreed, the warranty is in effect for 15 months from the date of delivery on in case of intended use in one-shift operation and under compliance of the specified maintenance- and lubrication intervals.

4.3 *Systems*

4.3.1 EDP mini

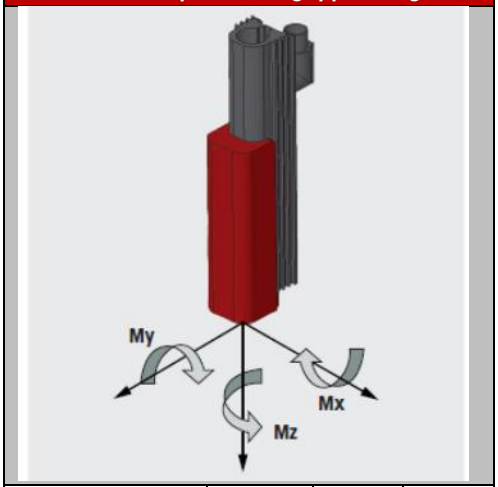
Description

With the EDP mini, a very compact and, with 40 mm construction width, very slim handling is made available which is alternatively driven by a linear motor or pneumatically.
Concerning short cycle times, the linear motor handling is by far superior to all pneumatic systems at the points of efficiency, energy consumption, maintenance cycles and life cycle. Simple processes with less demanding cycle times can also be realized with the structurally identical pneumatic modules EDM 20 P. Due to the small construction width of only 40mm, the EDP mini needs few space. The EDP is delivered ready for operation and completely mounted.
Advantages:

- up to 120 cycles per minute
- only 40 mm wide
- up to 3 kg useful load
- very high durability
- low energy consumption of the linear modules
- CAD models are immediately available due to the handling configurator

Technical Data	EDM 20 P	EDM 20 EL	
Drive method	pneumatic	electrical, linear motor	
Stroke horizontal (Y)	50,100 mm	50 mm	100,200,300 mm
Stroke vertical (Z)	50,100 mm	50 mm	100,200,300 mm
Maximum speed	1,5m/s	6,8m/s	4,8m/s
Peak force	180N	67N	137N
Permanent force	180N	15N	31N
Repeatability	+/-0,05mm	+/-0,05mm	+/-0,05mm
- with external distance measurement system (5µm)	-	+/-0,02mm	+/-0,02mm
Control block with 5/3, 5/2 or vacuum units	up to 6 valves		

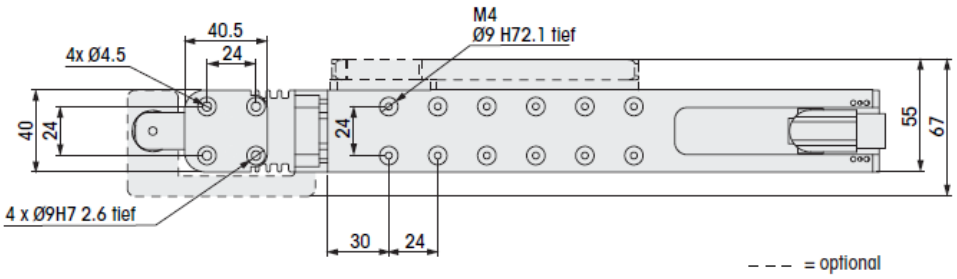
Permissible torques at the gripper flange



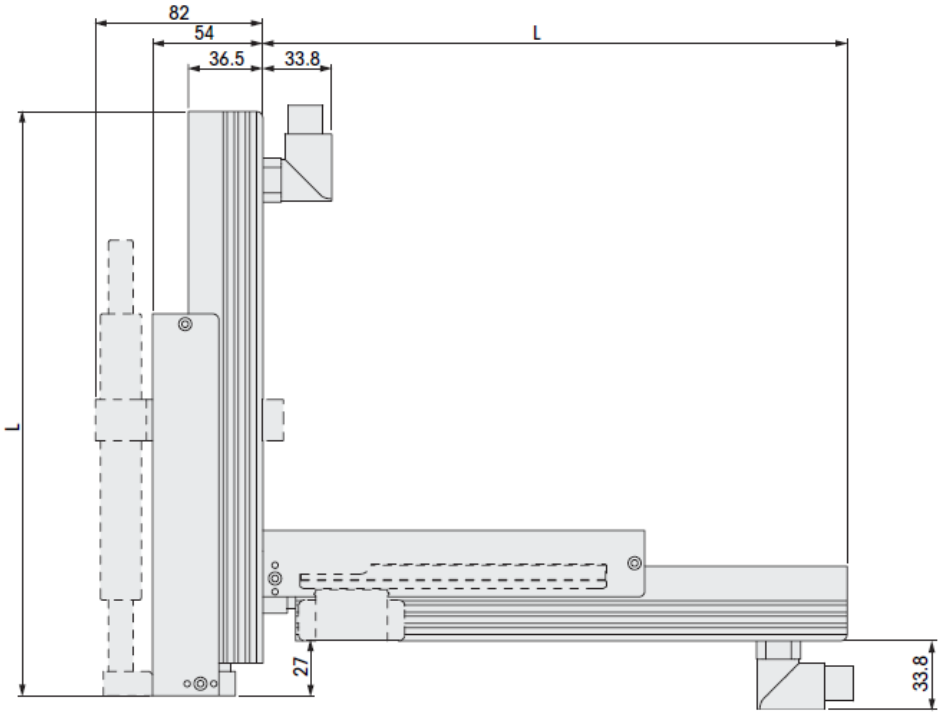
Torques	Tx	Ty	Tz
EDP mini 50/xxx	25Nm	5Nm	5Nm
EDP mini 100/xxx	25Nm	5Nm	5Nm
EDP mini 200/xxx	50Nm	5Nm	5Nm
EDP mini 300/xxx	50Nm	5Nm	5Nm

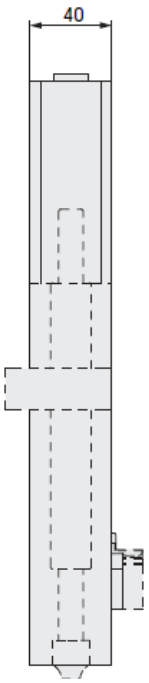
Useful load (centric)

Stroke Y Stroke Z	50mm	100mm	200mm	300mm
50mm	3kg	3kg	2kg	1kg
100mm	3kg	2kg	1kg	0,5kg
200mm	2kg	1kg	-	-
300mm	1kg	-	-	-



Maß	L
EDM 20-50 P	230
EDM 20-100 P	300
EDM 20-50 EL	193
EDM 20-100 EL	286
EDM 20-200 EL	366
EDM 20-300 EL	496





4.3.2 EDP standard

Description

The pick & place devices EDP are based on EDM linear units. These linear units were especially developed to reach short cycle times. The pick & place device EDP standard consists of the following drive units:
EDM 25 - horizontal linear unit (electrical or pneumatic)
EDM 20 - vertical linear unit (electrical or pneumatic)
EDS – control block

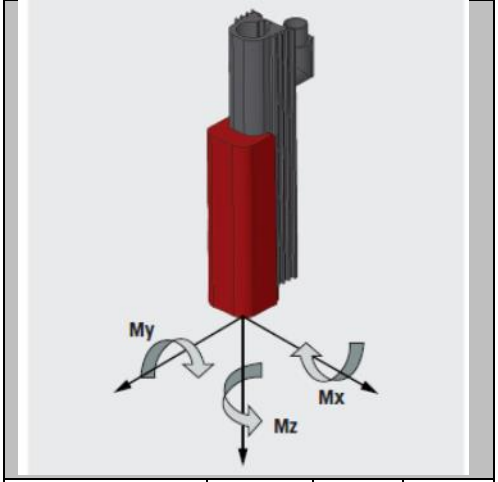
Advantages:

- free choice between electrical or pneumatic linear units
- compact, ready for operation construction
- quick setup
- very simple stroke adjustment
- simple adjustment of speeds via exhaust air throttles at the control block
- low wear because of doing without dampers
- safe cable- and hose duct with warranty
- many options

Technical Data	EDM 25	EDM 25 EL	EDM 20	EDM 20 EL	
Drive method	pneumatic	electrical, linear motor	pneumatic	electrical, linear motor	
Stroke horizontal (Y)	60,100,160,200, 260,300,360mm	100,200,300,360mm	-	-	-
Stroke vertical (Z)	-	-	50,100 mm	50 mm	100,200,300 mm
Maximum speed	1,5m/s	4,8m/s	1,5m/s	6,8m/s	4,8m/s
Peak force	280N	137N	180N	67N	137N
Permanent force	280N	31N	180N	15N	31N
Repeatability	+/-0,05mm	+/-0,05mm	+/-0,05mm	+/-0,05mm	+/-0,05mm
- with external distance measurement system (5µm)	-	+/-0,02mm	-	+/-0,02mm	+/-0,02mm
Control block with 5/3, 5/2 or vacuum units	up to 6 valves				

Instead of the EDM 25 EL the EDM 30 EL can be applied alternatively. Please, regard the technical data of this module on page 33 in this case.

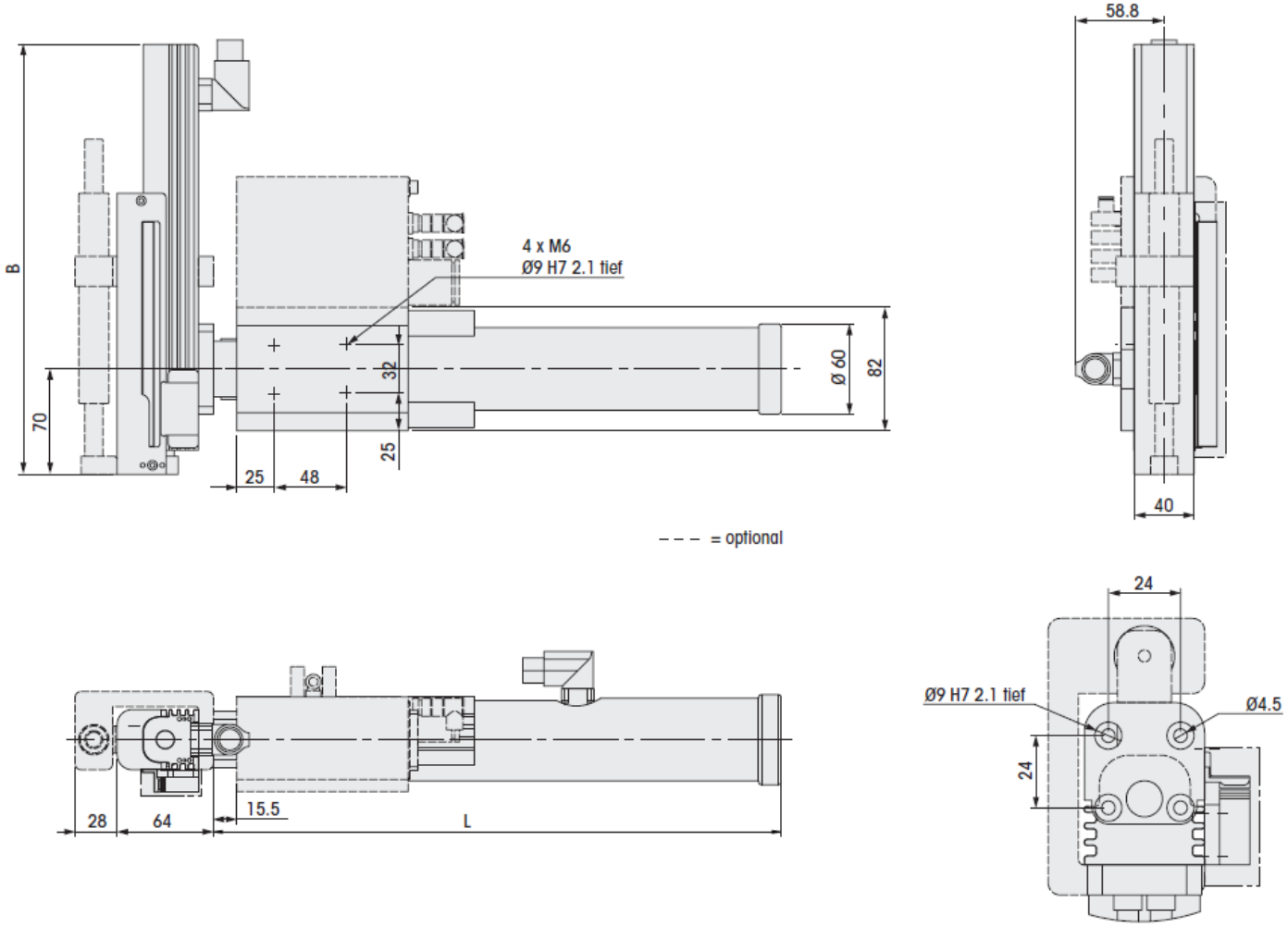
Permissible torques at the gripper flange



Torques	Tx	Ty	Tz
EDP mini 50/xxx	25Nm	5Nm	5Nm
EDP mini 100/xxx	25Nm	5Nm	5Nm
EDP mini 200/xxx	50Nm	5Nm	5Nm
EDP mini 300/xxx	50Nm	5Nm	5Nm

Useful load (centric)

Stroke Y Stroke Z	60mm	100mm	160mm	200mm	260mm	300mm	360mm
50mm	4kg	4kg	4kg	4kg	4kg	3kg	2kg
100mm	4kg	4kg	4kg	3kg	3kg	2kg	1kg
200mm	4kg	3kg	3kg	2kg	2kg	1kg	0,5kg
300mm	1kg	2kg	2kg	1kg	1kg	0,5kg	0,5kg



Measurement	A		B	
Type	pneumatic	electrical linear motor	pneumatic	electrical linear motor
EDM 25-60	216	-	-	-
EDM 25-100	371	297	-	-
EDM 25-160	371	-	-	-
EDM 25-200	471	378	-	-
EDM 25-260	471	-	-	-
EDM 25-300	571	507	-	-
EDM 25-360	571	607	-	-
EDM 20-50	-	-	230	193
EDM 20-100	-	-	300	286
EDM 20-200	-	-	-	366
EDM 20-300	-	-	-	496

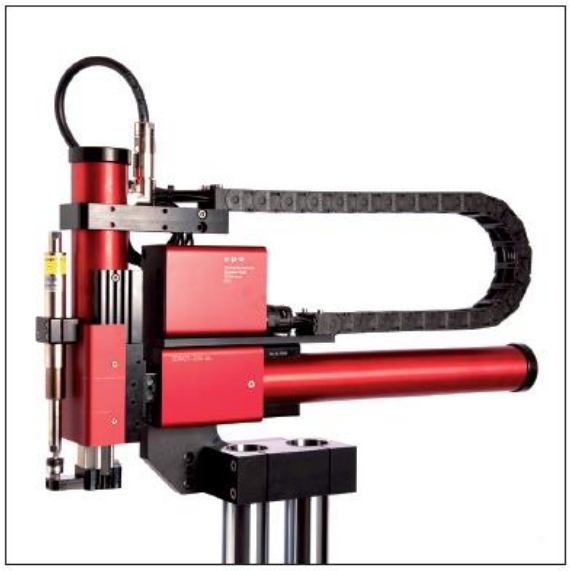
4.3.3 EDP maxi

Description

The EDP Portal high dynamics due to its very dynamic linear motor in the x-axis and the light weight z-axis and thus very short cycle times even at long strokes. The horizontal linear unit is built electrically, the vertical unit is built either electrically or pneumatically on demand.

Advantages:

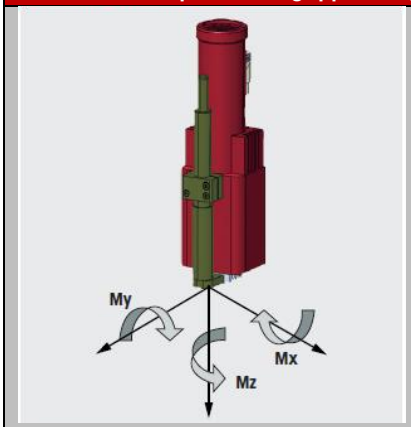
- high dynamics in the x- and z-direction
- short cycle times at long travel ways
- high precision by means of an optional distance measurement system
- compact construction
- various options



Technical Data	EDM 25	EDM 25 EL
Drive method	pneumatic	electrical, linear motor
Stroke horizontal (Y)	60,100,160,200,260,300,360mm	100,200,300,360mm
Stroke vertical (Z)	60,100,160,200,260,300,360mm	100,200,300,360mm
Maximum speed	1,5m/s	4,8m/s
Peak force	280N	137N
Permanent force	280N	31N
Repeatability	+/-0,05mm	+/-0,05mm
- with external distance measurement system (5µm)	-	+/-0,02mm
Control block with 5/3, 5/2 or vacuum units	up to 6 valves	

Instead of the EDM 25 EL the EDM 30 EL can be applied alternatively. Please, regard the technical data of this module on page 33 in this case.

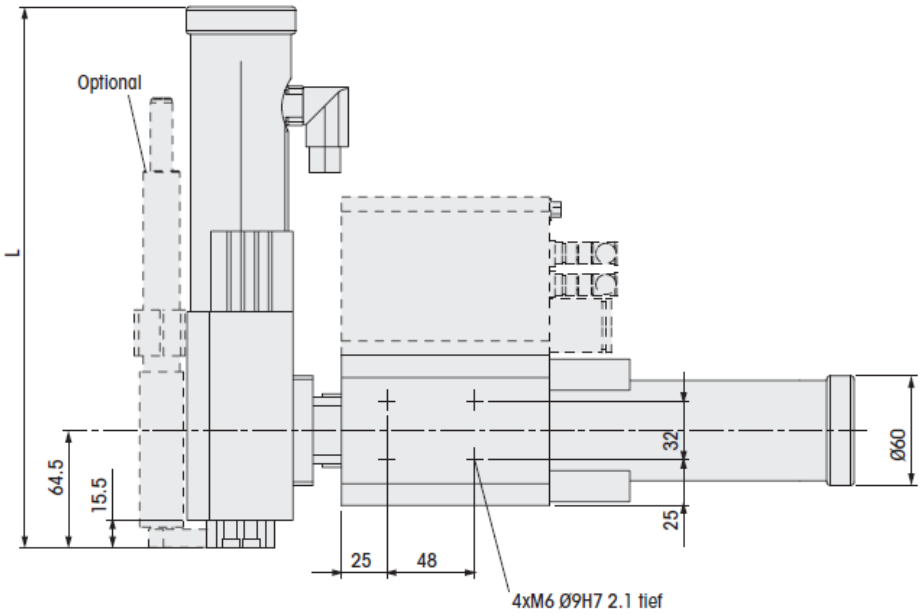
Permissible torques at the gripper flange

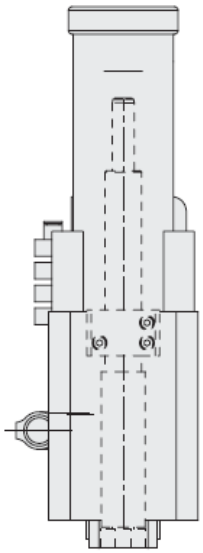


Torques	Tx	Ty	Tz
	50Nm	5Nm	5Nm

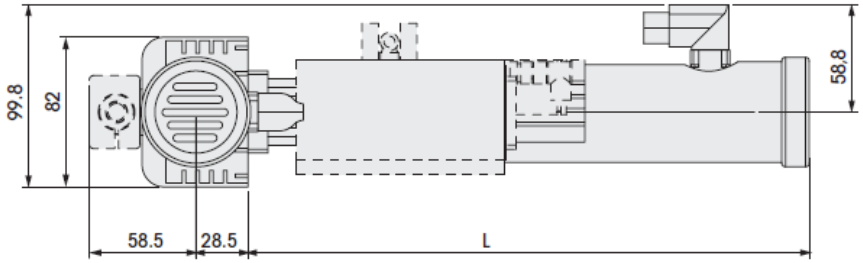
Useful load (centric)

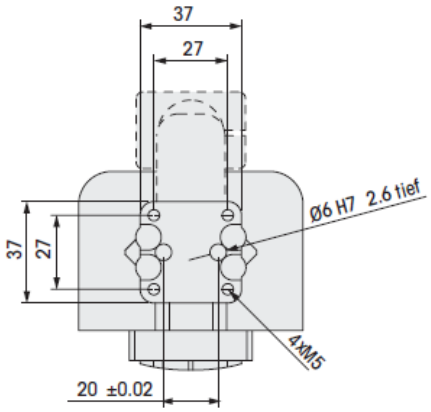
Stroke Y / Stroke Z	60mm	100mm	160mm	200mm	260mm	300mm	360mm
60mm	5kg	5kg	5kg	4,5kg	4,5kg	3kg	3kg
100mm	5kg	5kg	5kg	4kg	4kg	3kg	3kg
160mm	5kg	5kg	5kg	4kg	4kg	3kg	3kg
200mm	5kg	4kg	4kg	3kg	3kg	2kg	2kg
260mm	5kg	4kg	4kg	3kg	3kg	2kg	2kg
300mm	4kg	3kg	3kg	2kg	2kg	1kg	1kg
360mm	4kg	3kg	3kg	2kg	2kg	1kg	1kg





- - - = optional





Measurement	A	
Type	pneumatic	Electrical linear motor
EDM 25-60	216	-
EDM 25-100	371	297
EDM 25-160	371	-
EDM 25-200	471	378
EDM 25-260	471	-
EDM 25-300	571	507
EDM 25-360	571	607

4.3.4 EDP Portal standard

Description

The EDP Portal high dynamics due to its very dynamic linear motor in the x-axis and the light weight z-axis and thus very short cycle times even at long strokes. The horizontal linear unit is built electrically, the vertical unit is built either electrically or pneumatically on demand.

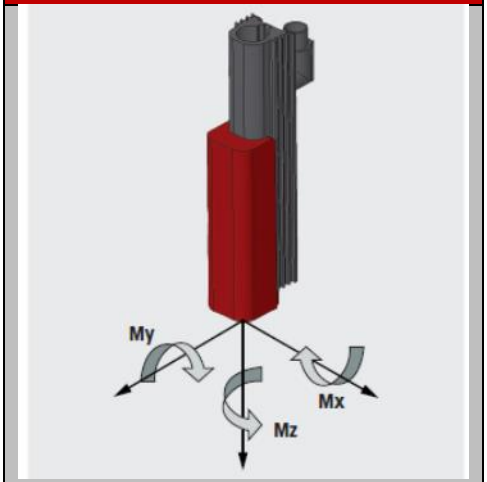
Advantages:

- high dynamics in the x- and z-direction
- short cycle times at long travel ways
- high precision by means of an optional distance measurement system
- compact construction
- various options

Technical Data	PM 25 EL	EDM 20 P	EDM 20 EL	
Drive method	electrical, linear motor	pneumatic	Electrical, linear motor	
Stroke horizontal (X)	90,1450mm*2 150,250,350,450,550,650,750 950,1150,1350mm*1	-	-	-
Stroke vertical (Z)	-	50, 100mm	50mm	100, 200, 300mm
Maximum speed	3,5m/s²	1.5m/s	6.8m/s	4.8m/s
Peak force	255N	180N	67N	137N
Permanent force	51N	180N	15N	31N
Repeatability	± 0.05mm	± 0.05mm	± 0.05mm	±0.05mm
-with external distance measurement system (5µm)	± 0.02mm	-	± 0.02mm	±0.02mm
Control block with 5/3, 5/2 or vacuum units	up to 6 valves	up to 6 valves	up to 6 valves	up to 6 valves

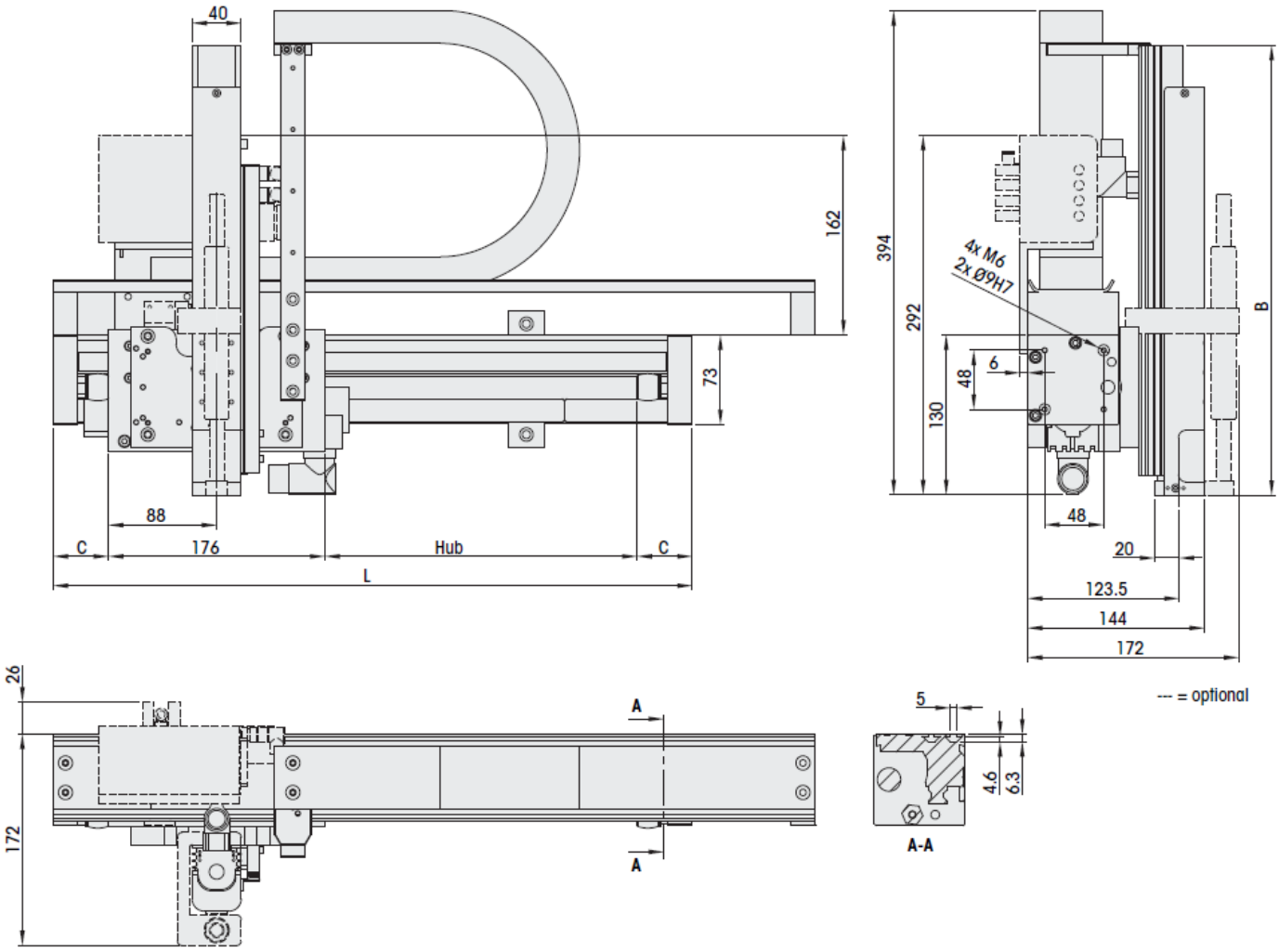
*1 with wiper – 20mm stroke
*2 only without wiper

Permissible torques at the gripper flange



Torques	Tx	Ty	Tz
EDM 20-50	25Nm	25Nm	5Nm
EDM 20-100	25Nm	25Nm	5Nm
EDM 20-200	50Nm	25Nm	5Nm
EDM 20-300	50Nm	25Nm	5Nm

Useful load (centric)	
Stroke X Stroke Z	all strokes
50 mm	4kg
100 mm	4kg
200 mm	4kg
300 mm	3kg



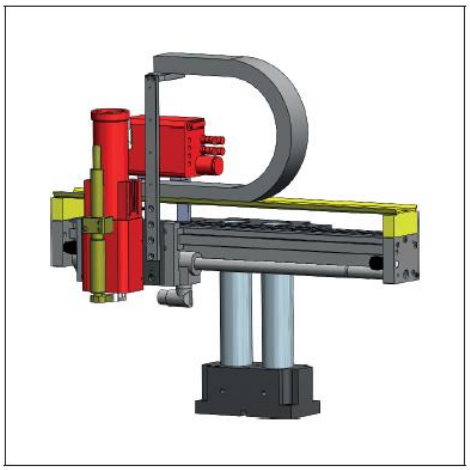
Measurement	L		B		C
Type	electrical linear motor	pneumatic	electrical linear motor	without wiper	with wiper
PM 25-xxx	stroke + 270	-	-	45	57
EDM 20-50	-	230	193	45	57
EDM 20-100	-	300	286	45	57
EDM 20-200	-	-	366	45	57
EDM 20-300	-	-	496	45	57

4.3.5 EDP Portal maxi

Description

The EDP Portal maxi transports high useful loads on long distances with high dynamics.
Opposite to the light z-axis of the Portal standard, the EDM 25 is operated in its pneumatic or electronic execution with linear motor or shaft.
Advantage:

- high dynamics even with bigger useful loads
- rigid construction
- robust execution

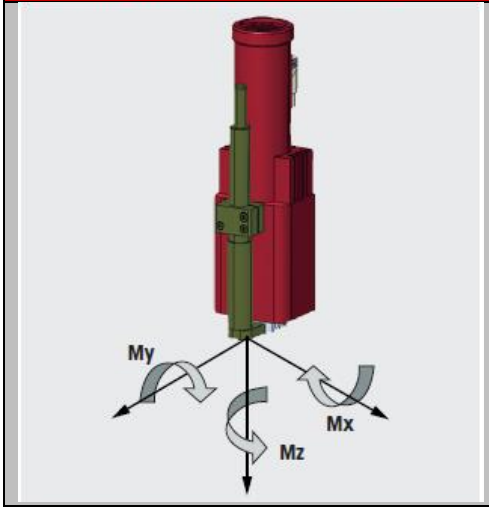


Technical Data	PM 25 EL	EDM 25	EDM 25 EL
Drive method	electrical, linear motor	pneumatic	electrical, linear motor
Stroke horizontal (X)	90, 1450*[2]mm 150, 250, 350, 450, 550, 650, 750, 950, 1150, 1350*[1]mm	-	-
Stroke vertical (Z)	-	60, 100, 160, 200, 260, 300, 360mm	100, 200, 300mm
Maximum speed	3.5m/s	1.5m/s	4.8m/s
Peak force	255N	280N	137N
Permanent force	51N	280N	31N
Repeatability	± 0.05mm	± 0.05mm	± 0.05mm
-with external distance measurement system (5µm)	± 0.02mm	-	±0.02mm
Control block with 5/3, 5/2 or vacuum units	up to 6 valves	up to 6 valves	up to 6 valves

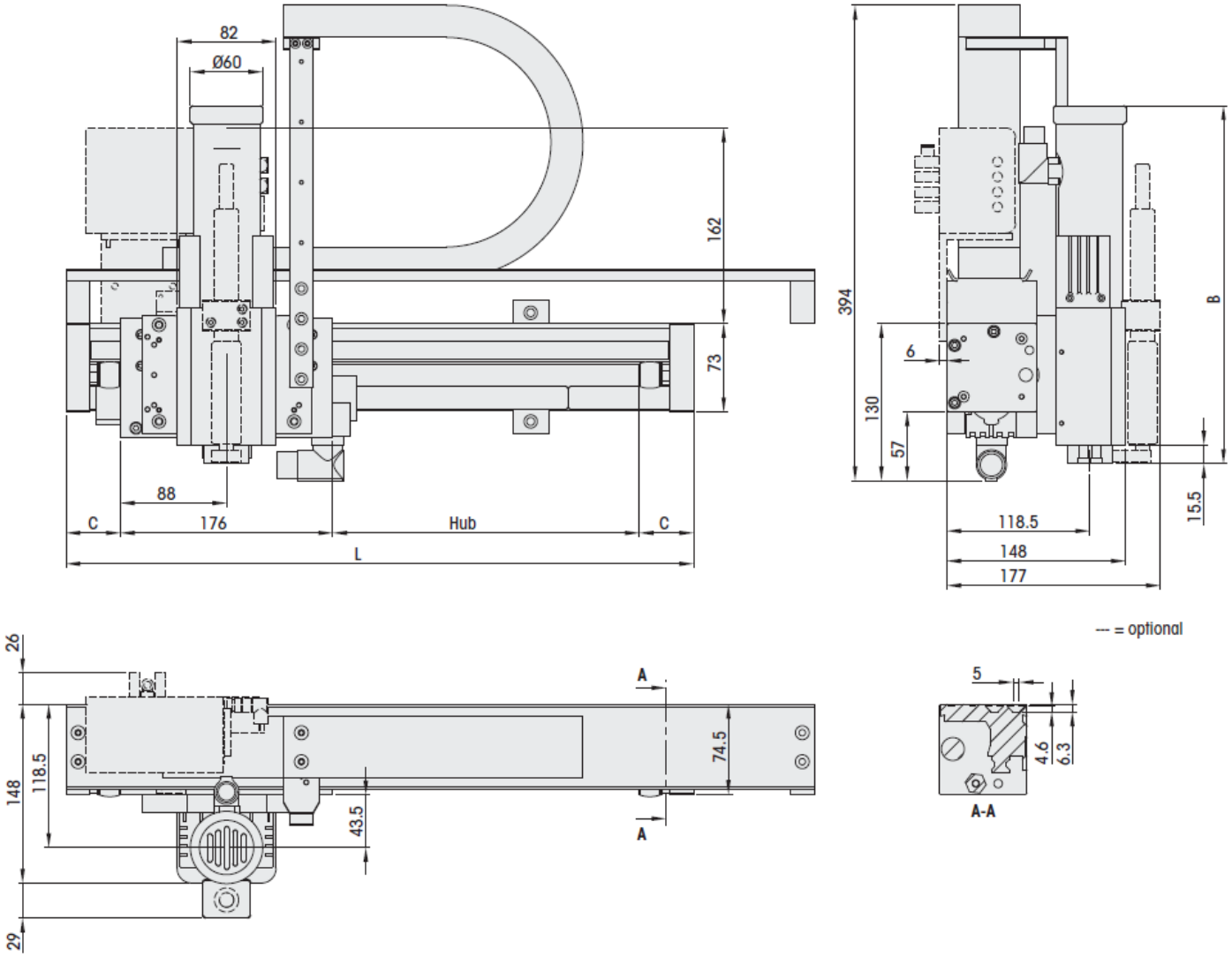
Instead of the EDM 25 EL the EDM 30 EL can be applied alternatively. Please, regard the technical data of this module on page 33 in this case.

Useful load (centric)	
Stroke X Stroke Y	all strokes
60 mm	5kg
100 mm	5kg
160 mm	4kg
200 mm	4kg
260 mm	3kg
300 mm	3kg
360 mm	2kg

Permissible torques at the gripper flange



Torques	Tx	Ty	Tz
	50 Nm	25 Nm	25Nm



Measurement	L	B		C	
Type	electrical linear motor	pneumatic	electrical linear motor	without wiper	with wiper
PM 25-xxx EL	stroke + 270	-	-	45	57
EDM 25-60	-	216	-	45	57
EDM 25-100	-	371	297	45	57
EDM 25-160	-	371	-	45	57
EDM 25-200	-	471	378	45	57
EDM 25-260	-	471	-	45	57
EDM 25-300	-	571	507	45	57
EDM 25-360	-	571	-	45	57

4.3.6 **EDP** standard XYZ

Description

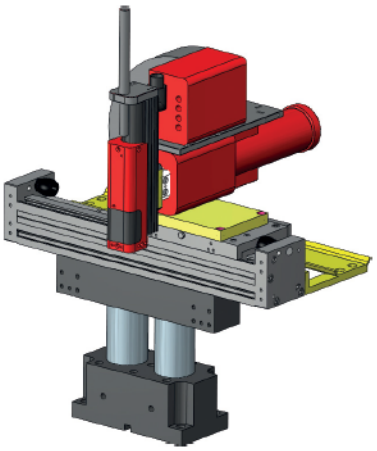
With the EDP standard XYZ, a very dynamic 3-axes handling system is made available.

Due to its scalable strokes and the free choice between electrical und pneumatic drive units, the EDP standard XYZ adjusts to your place of construction and your budget flexibly.

With its optional c-axis, the system is a real alternative to a robot.

Advantages:

- high dynamics
- high flexibility
- small space requirements due to scalable strokes
- optimal cost adjustment due to free choice of drive units
- complete systems by rotation units, grippers, suckers and controls



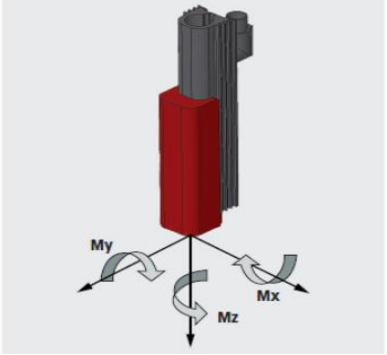
Technical Data	PM 25 EL	EDM 25	EDM 25 EL	EDM 20 P	EDM 20 EL	
Drive method	electrical, linear motor	pneumatic	electrical, linear motor	pneumatic	electrical, linear motor	
Stroke horizontal (X)	90, 1450*[2]mm 150, 250, 350, 450, 550, 650, 750, 950, 1150, 1350*[1]mm	-	-	-	-	-
Stroke horizontal (Y)	-	60, 100, 160, 200, 260, 300, 360mm	100, 200, 300, 360mm	-	-	-
Stroke vertical (Z)	-	-	-	50, 100mm	50mm	100, 200, 300mm
Maximum speed	-	1.5m/s	4.8m/s	1.5m/s	6.8m/s	4.8m/s
Peak force	255N	280N	137N	180N	67N	137N
Permanent force	51N	280N	31N	180N	15N	31N
Repeatability	± 0.05mm	± 0.05mm	± 0.05mm	± 0.05mm	± 0.05mm	± 0.05mm
-with external distance measurement system (5µm)	± 0.02mm	-	±0.02mm	-	± 0.02mm	± 0.02mm
Control block with 5/3, 5/2 or vacuum units	up to 6 valves	up to 6 valves	up to 6 valves	up to 6 valves	up to 6 valves	up to 6 valves

*1 with wiper – 20mm stroke
*2 only deliverable without wiper

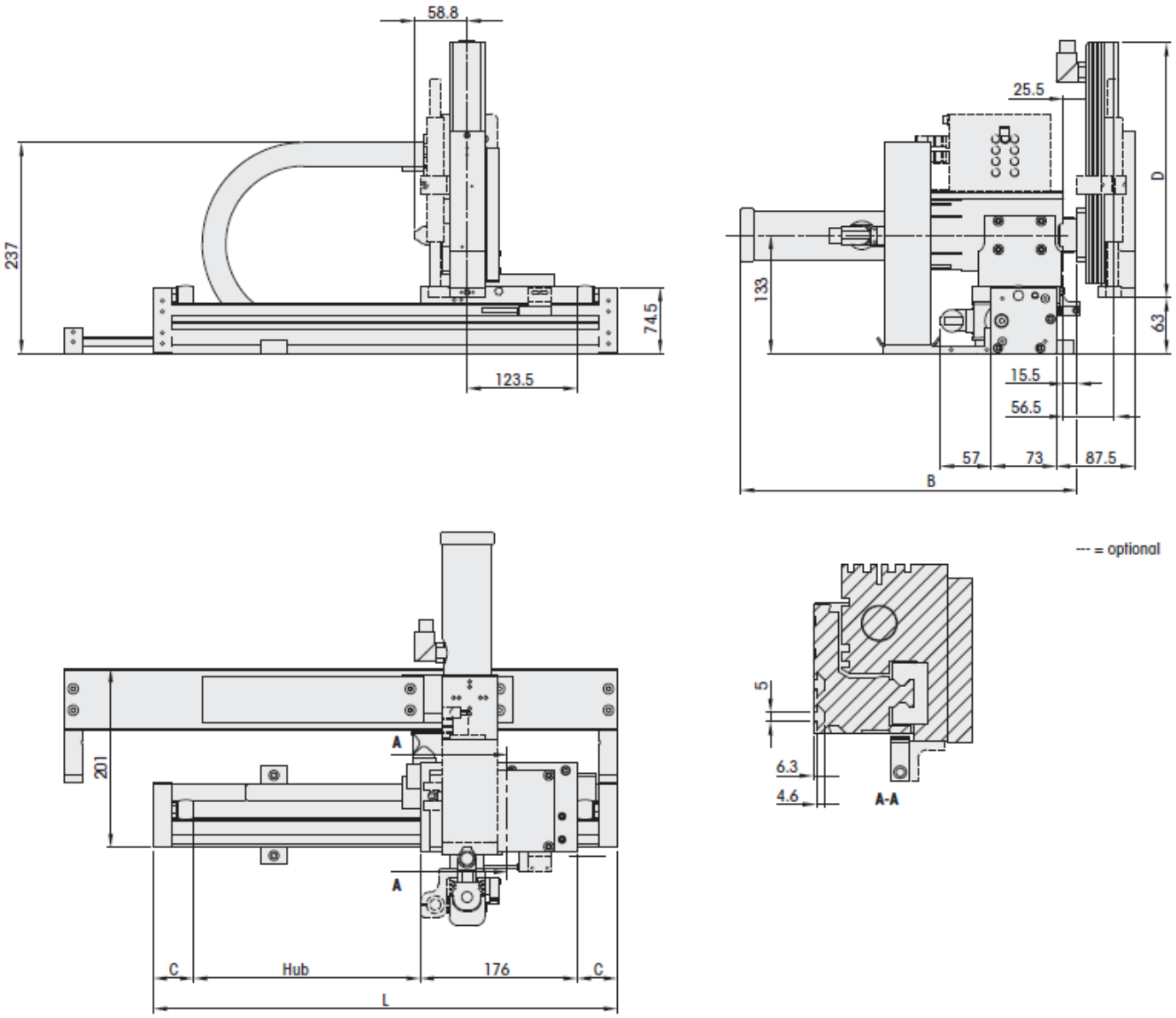
Instead of the EDM 25 EL the EDM 30 EL can be applied alternatively. Please, regard the technical data of this module on page 33 in this case.

Useful load (centric)							
Stroke Y Stroke Z	60 mm	100 mm	160 mm	200 mm	260 mm	300 mm	360 mm
50 mm	4kg	4kg	4kg	4kg	4kg	3kg	2kg
100 mm	4kg	4kg	4kg	3kg	3kg	2kg	1kg
200 mm	4kg	3kg	3kg	2kg	2kg	1kg	0.5kg
300 mm	3kg	2kg	2kg	1kg	1kg	0.5kg	0.5kg

Permissible torques at the gripper flange



Torques	Tx	Ty	Tz
EDM 20-50	25Nm	10Nm	5Nm
EDM 20-100	25Nm	10Nm	5Nm
EDM 20-200	50Nm	10Nm	5Nm
EDM 20-300	50Nm	10Nm	5Nm



Measurement	L		B		C		D
Type	electrical linear motor	pneumatic	electrical linear motor	without wiper	with wiper	pneumatic	Electrical , linear motor
PM 25-xxx EL	stroke + 270	-	-	45	57	-	-
EDM 25-60	-	216	-	45	57	-	-
EDM 25-100	-	371	297	45	57	-	-
EDM 25-160	-	371	-	45	57	-	-
EDM 25-200	-	471	378	45	57	-	-
EDM 25-260	-	471	-	45	57	-	-
EDM 25-300	-	571	507	45	57	-	-
EDM 25-360	-	571	607	45	57	-	-
EDM 20-50	-	-	-	45	57	230	193
EDM 20-100	-	-	-	45	57	300	286
EDM 20-200	-	-	-	45	57	-	366
EDM 20-300	-	-	-	45	57	-	496

4.3.7 EDP maxi XYZ

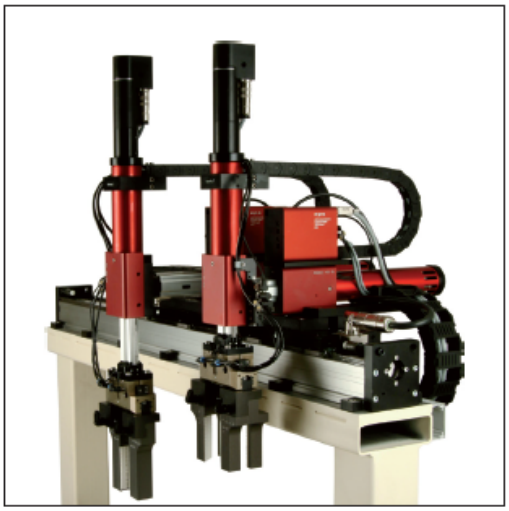
Description

The EDP maxi with its well-tried system of construction is complemented with an x-axis with linear motor. Besides the scalable strokes the system has a high stiffness for bigger useful loads. The standard construction works with the portal axis PM 25 EL as x-axis. For higher useful loads and longer cantilevers, the portal axis PM 30 EL is applied.

The vertical linear drive can be executed pneumatically or electrically with linear motor or with shaft drive.

Advantages:

- high useful load
- variable strokes
- big choice of linear units
- diverse peripherals

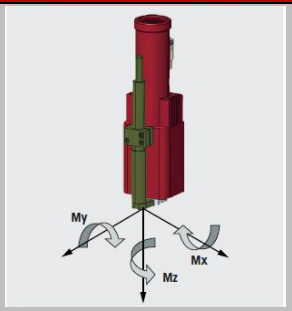


Technical Data	PM 25 EL	EDM 25	EDM 25 EL
Drive method	electrical, linear motor	pneumatic	electrical, linear motor
Stroke horizontal (X)	90, 1450*[2]mm 150, 250, 350, 450, 550, 650, 750, 950, 1150, 1350*[1]mm	-	-
Stroke horizontal (Y)	-	60, 100, 160, 200, 260, 300, 360mm	100, 200, 300, 36mm
Stroke vertical (Z)	-	60, 100, 160, 200, 260, 300, 360mm	100, 200, 300mm
Maximum speed	3.5m/s	1.5m/s	4.8m/s
Peak force	255N	280N	137N
Permanent force	51N	280N	31N
Repeatability	± 0.05mm	± 0.05mm	± 0.05mm
-with external distance measurement system (5µm)	± 0.02mm	-	±0.02mm
Control block with 5/3, 5/2 or vacuum units	up to 6 valves	up to 6 valves	up to 6 valves

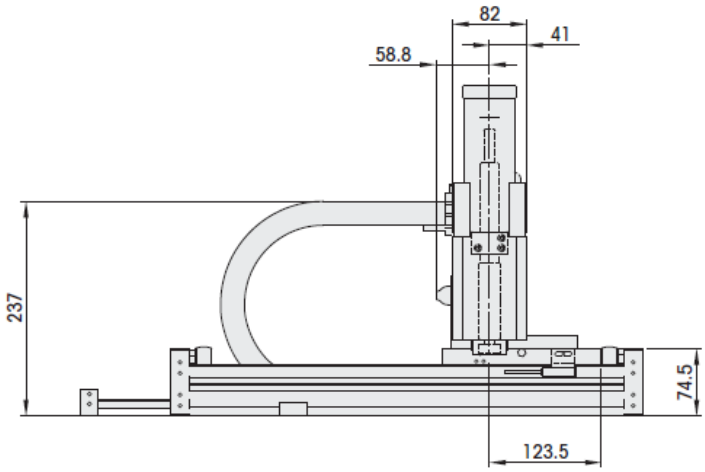
Instead of the EDM 25 EL the EDM 30 EL can be applied alternatively. Please, regard the technical data of this module on page 33 in this case.

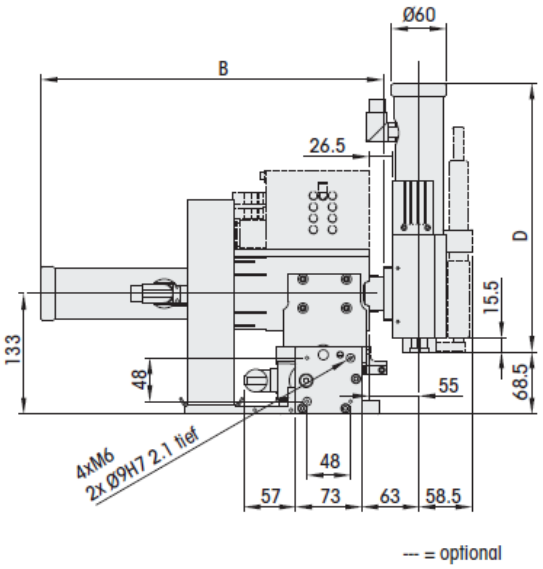
Useful load (centric)							
Stroke Y Stroke Z	60 mm	100 mm	160 mm	200 mm	260 mm	300 mm	360 mm
60 mm	5kg	5kg	5kg	4.5kg	4.5kg	3kg	3kg
100 mm	5kg	5kg	5kg	4kg	4kg	3kg	3kg
160 mm	5kg	5kg	5kg	4kg	4kg	3kg	3kg
200 mm	5kg	4kg	4kg	3kg	3kg	2kg	2kg
260 mm	5kg	4kg	4kg	3kg	3kg	2kg	2kg
300 mm	4kg	3kg	3kg	2kg	2kg	1kg	1kg
360 mm	4kg	3kg	3kg	2kg	2kg	1kg	1kg

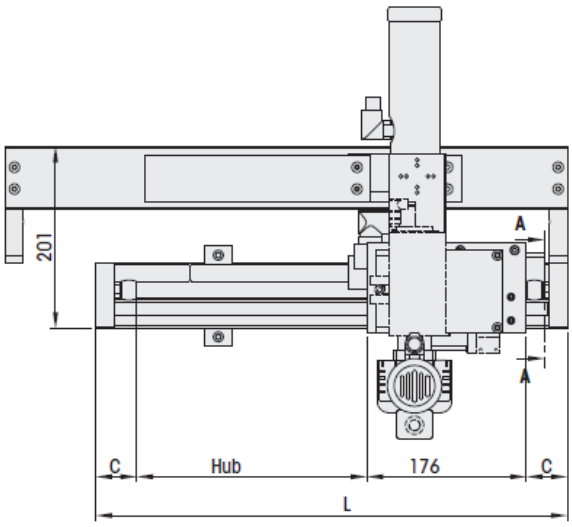
Permissible torques at the gripper flange

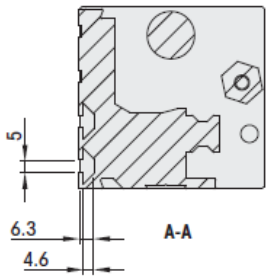


Torques	Tx	Ty	Tz
	50Nm	25Nm	25Nm









Measurement	L		B	C		D	
Type	electrical linear motor	pneumatic	electrical linear motor	without wiper	with wiper	pneumatic	electrical, linear motor
PM 25-xxx EL	stroke + 270			45	57	-	-
EDM 25-60	-			45	57	216	-
EDM 25-100	-			45	57	371	297
EDM 25-160	-			45	57	371	-
EDM 25-200	-			45	57	471	378
EDM 25-260	-			45	57	471	-
EDM 25-300	-			45	57	571	507
EDM 25-360	-			45	57	571	607

4.3.8 Area Gantry, Hanging

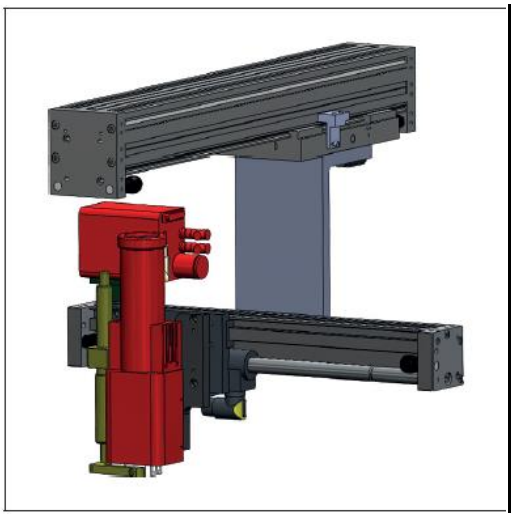
Description

Due to the centered position of the x-axis of the area gantry maxi, hanging version, a clearly longer y- traversing range can be realized. However, the stroke of the z-axis is limited because it moves under the x-axis.

Opposite to the conventional construction of gantries with double x-axis no tensions between the axes can occur with the lateral and hanging construction methods. So both systems have a long life cycle and are easy to integrate.

Advantages:

- large area by symmetrical construction
- high dynamics due to strong linear motors
- simple mounting



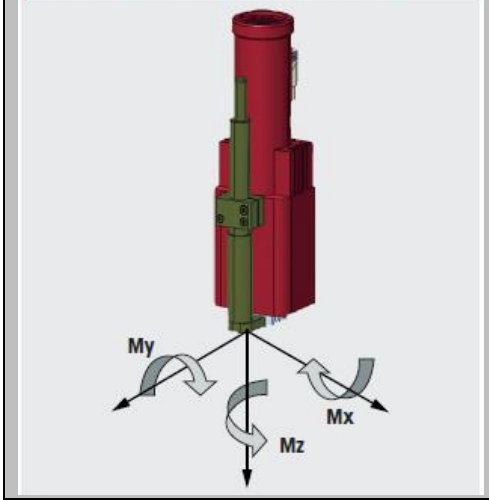
Technical Data	PM 30 EL	PM 25 EL	EDM 25 EL
Drive method	electrical, linear motor	electrical, linear motor	electrical, linear motor
Stroke horizontal (X)	170, 230, 320, 440, 530, 1820mm*1 150, 270, 360, 450, 570, 660, 870, 1050, 1260, 1470, 1650*1mm	-	-
	-	90mm*2, 150, 250, 350, 450, 550, 650, 750, 950mm*3	-
Stroke vertical (Z)	-	-	100, 200, 300mm
Maximum speed	2.5m/s	3.5m/s	4.8m/s
Peak force	550N	255N	137N
Permanent force	145N	51N	31N
Repeatability	± 0.05mm	± 0.05mm	± 0.05mm
-with external distance measurement system (5µm)	± 0.02mm	± 0.02mm	±0.02mm
Control block with 5/3, 5/2 or vacuum units	up to 6 valves	up to 6 valves	up to 6 valves

*1 without wiper
*2 only without wiper
*3 with wiper- 20mm stroke

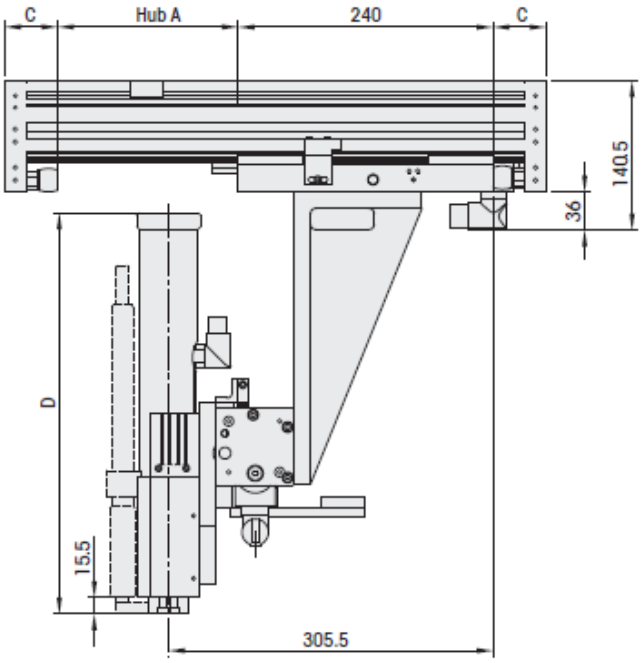
Instead of the EDM 25 EL the EDM 30 EL can be applied alternatively. Please, regard the technical data of this module on page 33 in this case.

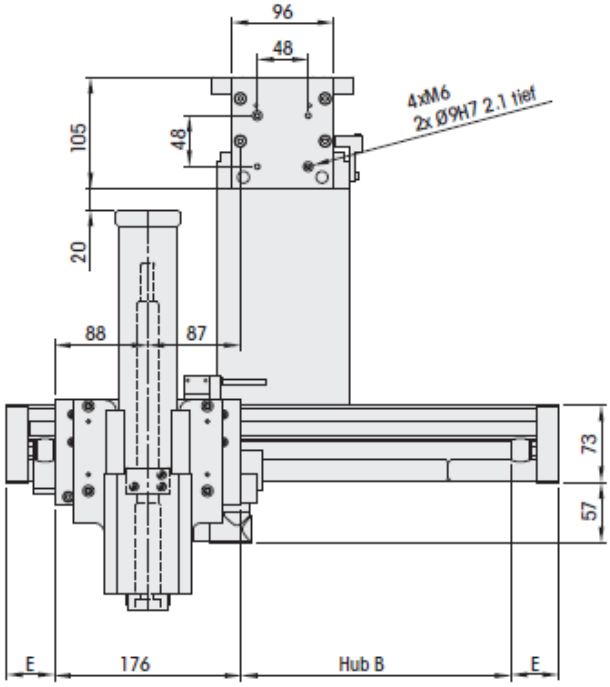
Useful load (centric)			
Stroke Y Stroke Z	90 - 650mm	750mm	950mm
100mm	5kg	4kg	4kg
200mm	5kg	4kg	3kg
300mm	4kg	3kg	2kg

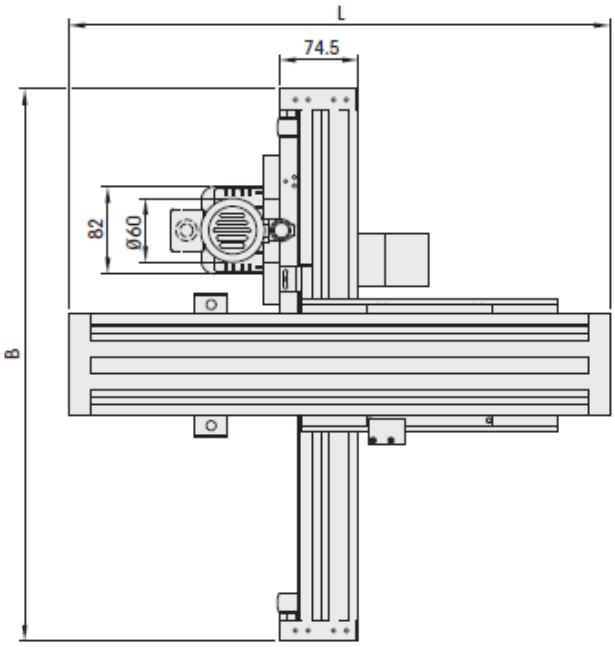
Permissible torques at the gripper flange



Torques	Tx	Ty	Tz
	50 Nm	25 Nm	25Nm







Measurement	A	B		C		D	E
Type	electrical, linear motor	Electrical, linear motor	electrical, linear motor	without wiper	with wiper		
PM 30-xxx EL	stroke +370 +30 (for axes with wiper)	-	-	45	57		
PM 25-xxx EL	-	stroke + 270	-	45	57		
EDM 25-100 EL	-	-	297	45	57		
EDM 25-200 EL	-	-	378	45	57		
EDM 25-300 EL	-	-	507	45	57		

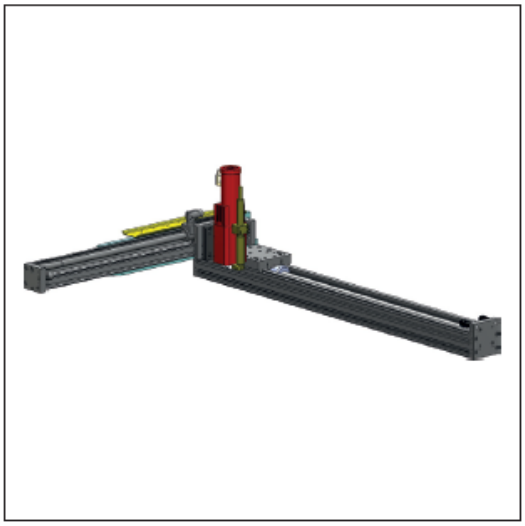
4.3.9 Area Gantry, Latarally

Description

The Area Gantry maxi lateral offers a very clear, big working space with very good accessibility. The portal axis PM 30 EL offers a very rigid base for the lateral cantilever with its allowed torque Tx of 250 Nm. Due to the strong linear motors the system offers a very high dynamics in the area. The vertical axis can be executed pneumatically or electrically according to your choice.

Advantages:

- high dynamics
- rigid construction
- clear arrangement
- very good accessibility

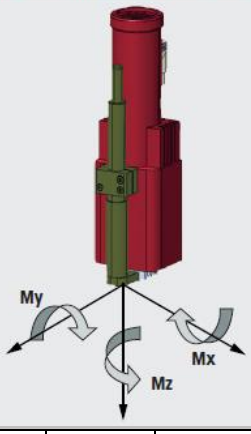


Technical Data	PM 30 EL	PM 25 EL	EDM 25 EL
Drive method	electrical, linear motor	electrical, linear motor	electrical, linear motor
Stroke horizontal (X)	170, 230, 320, 440, 530, 1820mm*1 150, 270, 360, 450, 570, 660, 870, 1050, 1260, 1470, 1650*1mm	-	-
	-	90mm*2, 150, 250, 350, 450, 550, 650, 750, 950mm*3	-
Stroke vertical (Z)	-	-	100, 200, 300mm
Maximum speed	2.5m/s	3.5m/s	4.8m/s
Peak force	550N	255N	137N
Permanent force	145N	51N	31N
Repeatability	± 0.05mm	± 0.05mm	± 0.05mm
-with external distance measurement system (5µm)	± 0.02mm	± 0.02mm	±0.02mm
Control block with 5/3, 5/2 or vacuum units	up to 6 valves	up to 6 valves	up to 6 valves

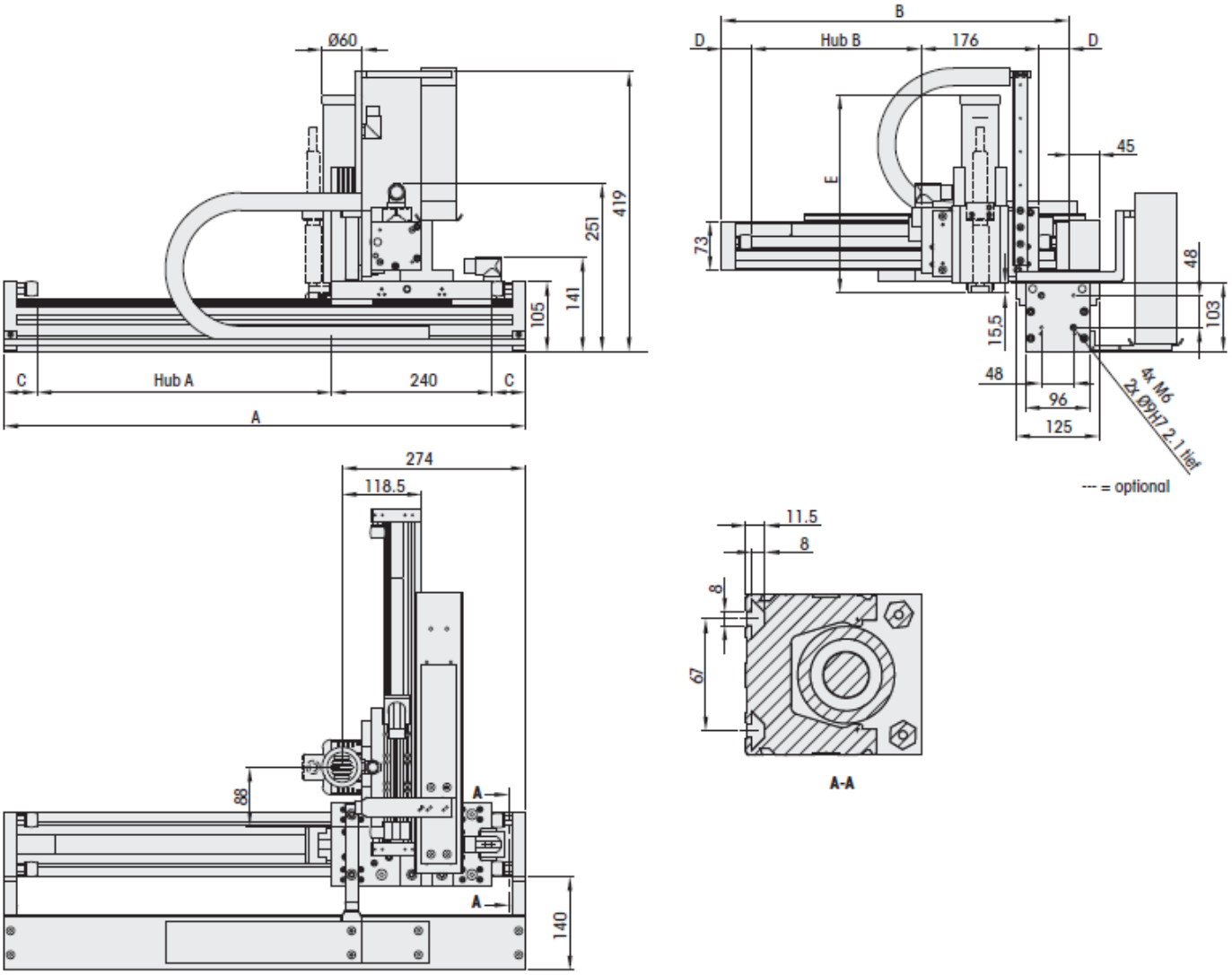
Instead of the EDM 25 EL the EDM 30 EL can be applied alternatively. Please, regard the technical data of this module on page 33 in this case.

Useful load (centric)				
Stroke Y Stroke Z	90 - 350mm	450mm	550mm	650mm
100mm	5kg	4kg	4kg	3kg
200mm	5kg	4kg	3kg	2kg
300mm	4kg	3kg	2kg	1kg

Permissible torques at the gripper flange



Torques	Tx	Ty	Tz
	50 Nm	25 Nm	25Nm

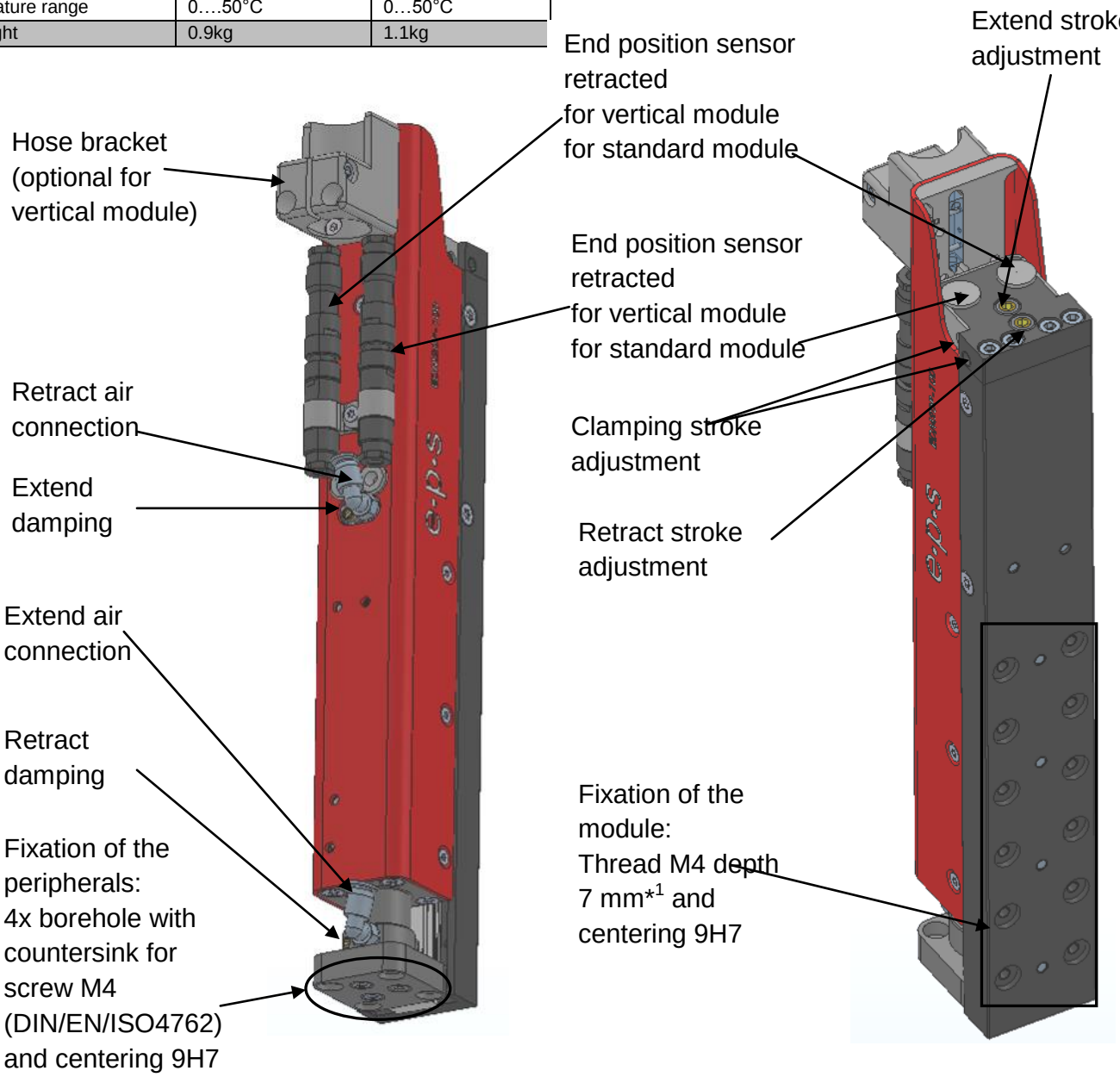


Measurement	A	B		C		D	E
Type	electrical, linear motor	Electrical, linear motor	electrical, linear motor	without wiper	with wiper		
PM 30-xxx EL	stroke +370 +30 (for axes with wiper)	-	-	45	57		
PM 25-xxx EL	-	stroke + 270	-	45	57		
EDM 25-100 EL	-	-	297	45	57		
EDM 25-200 EL	-	-	378	45	57		
EDM 25-300 EL	-	-	507	45	57		

4.4 *Modules*

4.4.1 Linear Module EDM 20P

Technical Data	EDM 20-50 P	EDM 20-100 P
Drive method	pneumatic	pneumatic
Stroke	50mm	100mm
Maximum speed	1.5 m/s	1.5m/s
Peak force	180N	180N
Permanent force	180N	180N
Useful load (centric)	4kg	4 kg
Repeatability	± 0.02mm	±0.02mm
Operating pressure	4…7bar	4….7bar
Piston diameter	20mm	20mm
Temperature range	0….50°C	0…50°C
Net weight	0.9kg	1.1kg

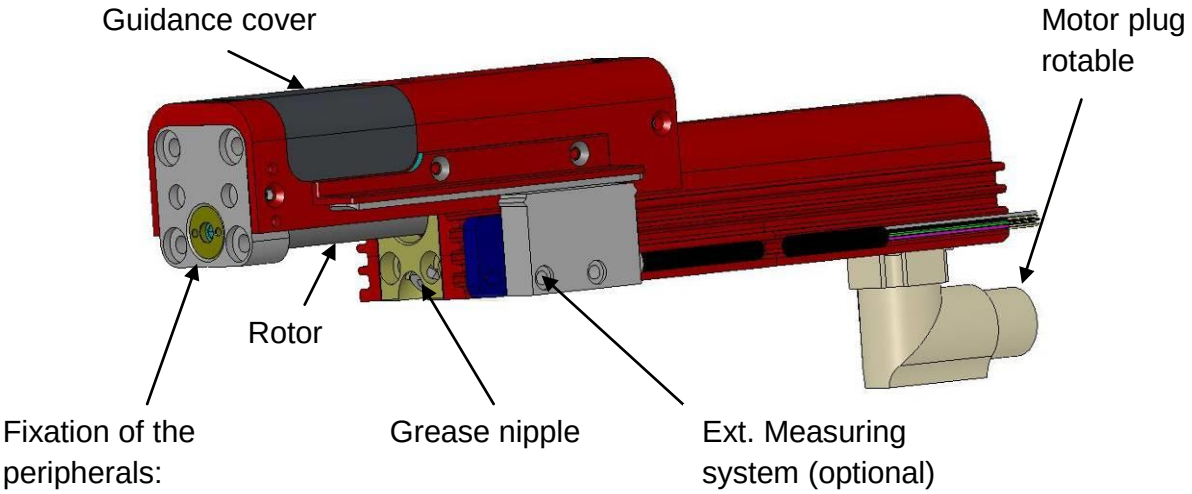


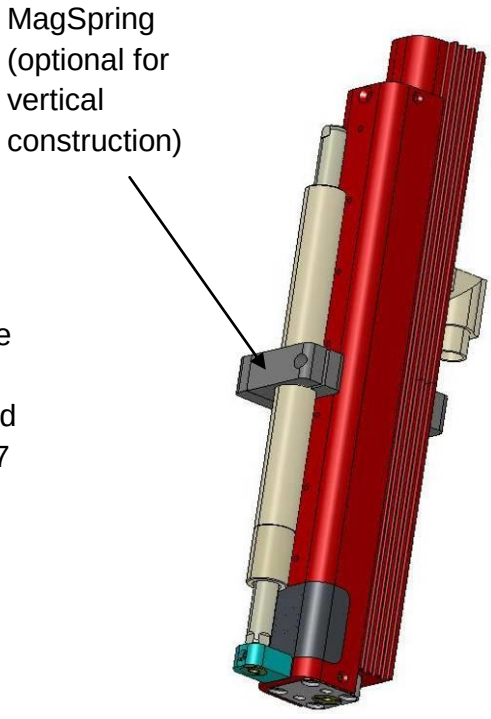
Attention

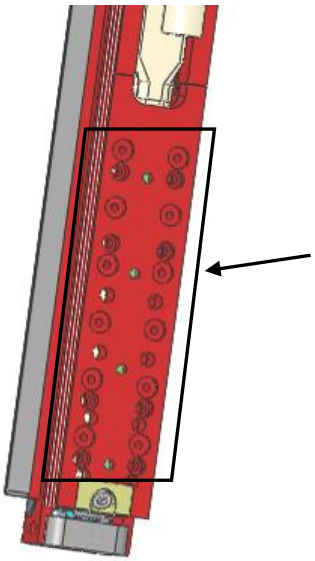
*1 Too long or short screws can lead to damages of the device or the peripherals.

4.4.2 Linear Axis EDM20EL

Technical Data	EDM 20-50 EL	EDM 20-100 EL	EDM 20-200 EL	EDM20-300 EL
Drive method	electrical, linear motor	electrical, linear motor	electrical, linear motor	Electrical, linear motor
Stroke	50mm	100mm	200mm	300mm
Maximum speed	6.8m/s	4.8m/s	4.8m/s	4.8m/s
Peak force	67N	137N	137N	137N
Permanent force	15N	31N	31N	31N
Useful load (centric)	4kg	4kg	3kg	2kg
Repeatability	± 0.05mm	± 0.05mm	±0.05mm	±0.05mm
-with external distance measurement system (10µm)	±0.01mm	±0.01mm	±0.01mm	±0.01mm
Temperature range	0…50°C	0…50°C	0…50°C	0…50°C
Net weight	1.0kg	1.5kg	1.9kg	2.3kg
Air purity class (ISO 14644-1)	5	5	5	5





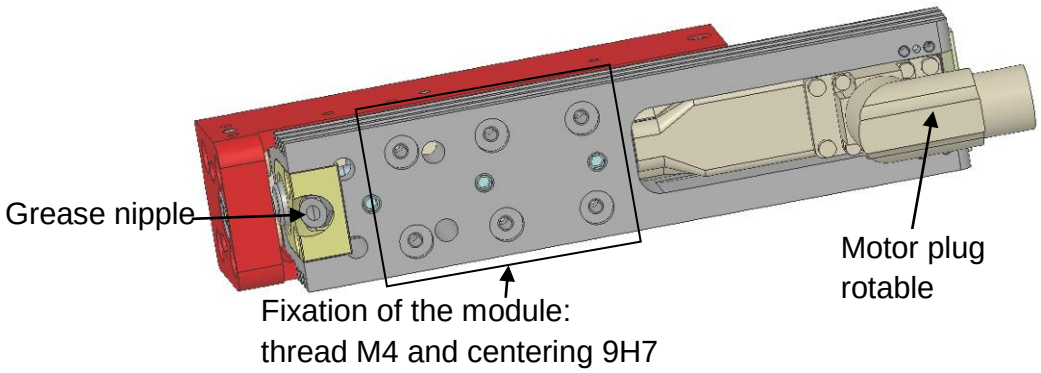


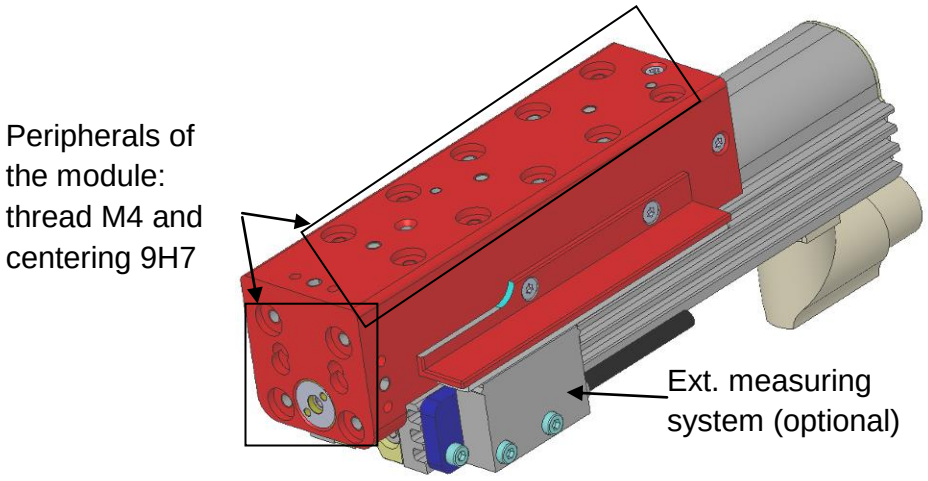
Attention

The tape of the external measuring system contains magnetic information. There must always be sufficient distance to other magnets.

4.4.3 Linear Axis SM20EL

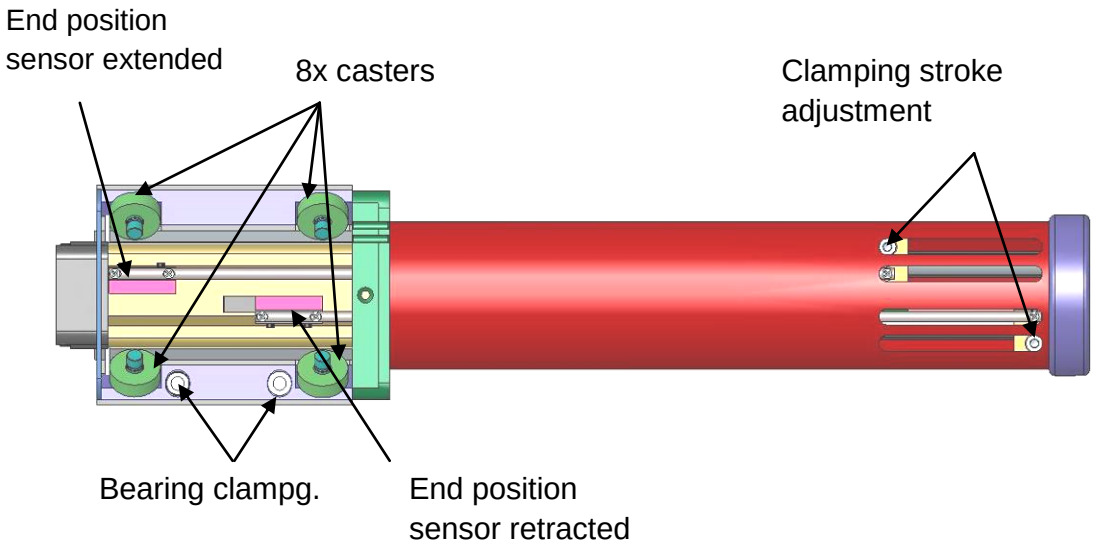
Technical Data	SM 20-50 EL	SM 20-100 EL	SM 20-200 EL	SM 20-300 EL
Drive method	electrical, linear motor	electrical, linear motor	electrical, linear motor	electrical, linear motor
Stroke	50mm	100mm	200mm	300mm
Maximum speed	6.8m/s	4.8m/s	4.8m/s	4.8m/s
Peak force	67N	137N	137N	137N
Permanent force	15N	31N	31N	31N
Useful load (centric)	4kg	4kg	3kg	2kg
Repeatability	± 0.05mm	± 0.05mm	±0.05mm	±0.05mm
-with external distance measurement system (10µm)	±0.01mm	±0.01mm	±0.01mm	±0.01mm
Temperature range	0…50°C	0…50°C	0…50°C	0…50°C
Net weight	1.0kg	1.5kg	1.9kg	2.3kg

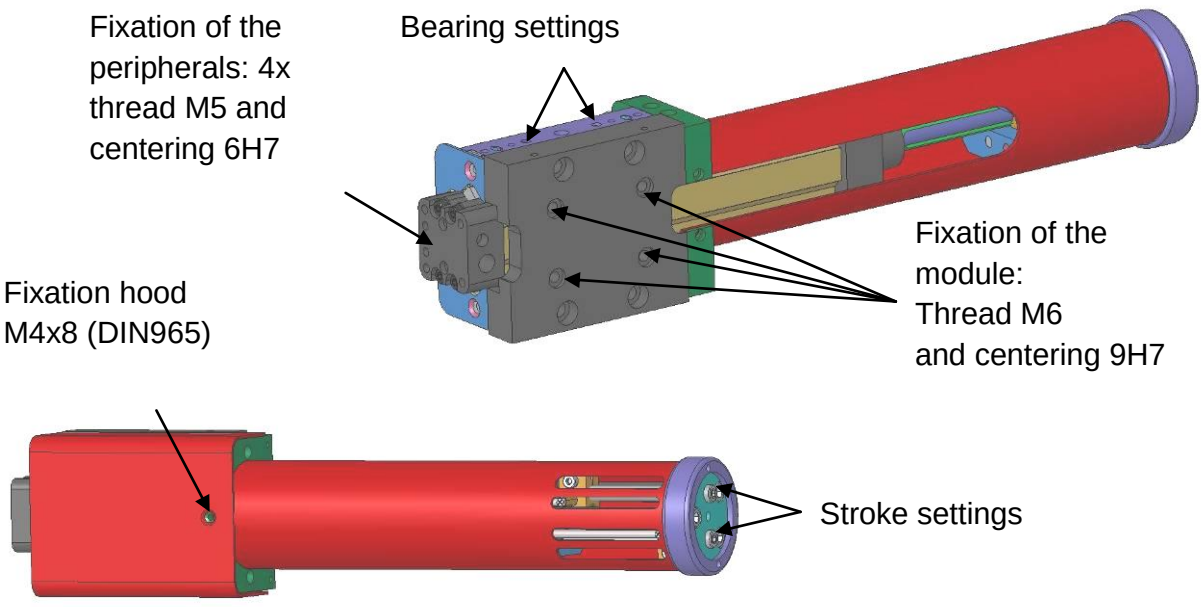




4.4.4 Linear Module EDM25

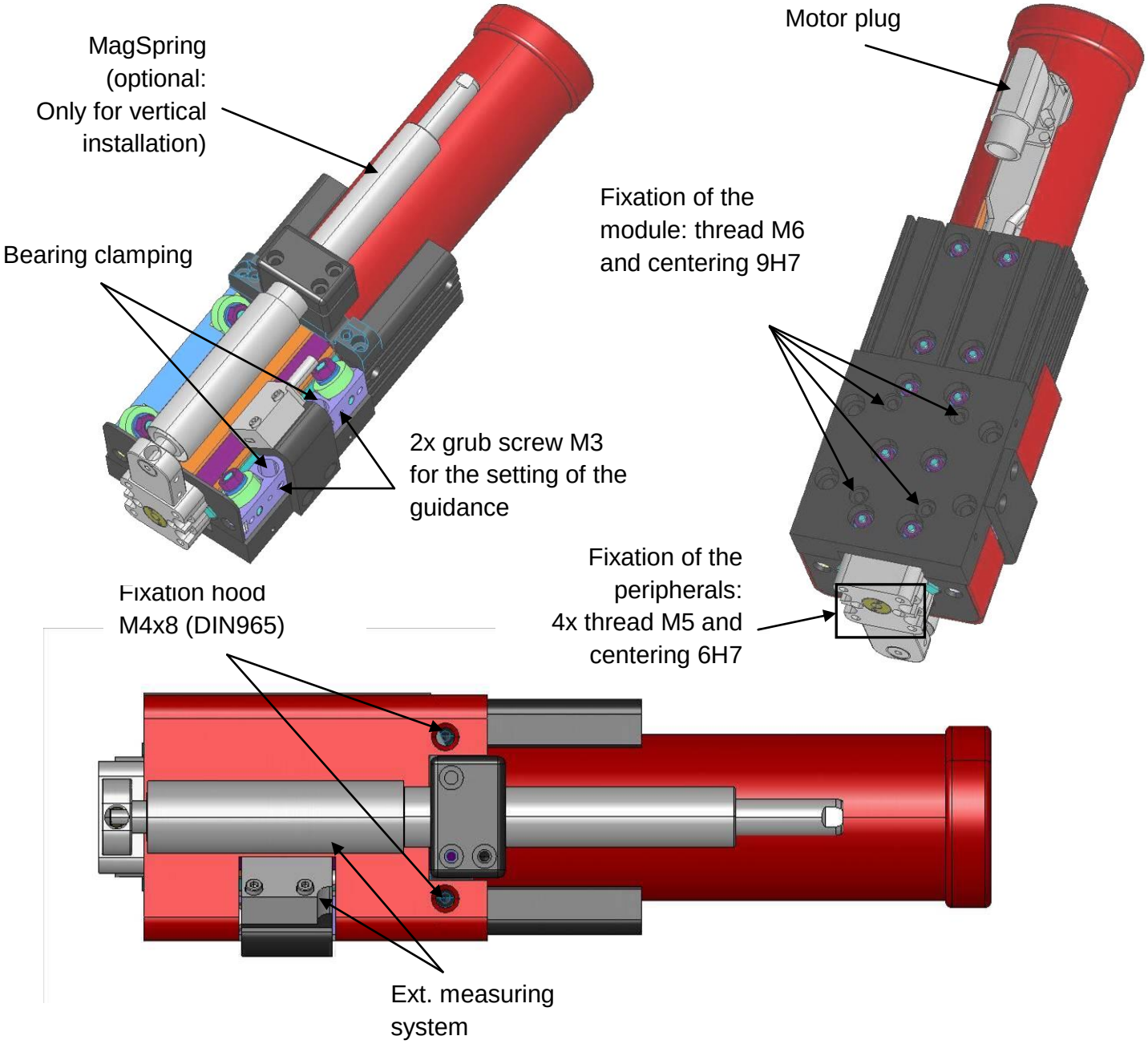
Technical Data	EDM 25-60 P	EDM 25-100 P	EDM 25-160 P	EDM 25-200 P	EDM 25-260 P	EDM 25-300 P	EDM 25-360 P
Drive method	pneumatic	pneumatic	pneumatic	pneumatic	pneumatic	pneumatic	pneumatic
Stroke	60mm	100mm	160mm	200mm	260mm	300mm	360mm
Maximum speed	1.5m/s	1.5m/s	1.5m/s	1.5m/s	1.5m/s	1.5m/s	1.5m/s
Peak force	280N	280N	280N	280N	280N	280N	280N
Permanent force	280N	280N	280N	280N	280N	280N	280N
Useful load (centric)	5kg	5kg	4.5kg	4kg	3kg	2kg	1.5kg
Repeatability	± 0.03mm	± 0.03mm	±0.03mm	±0.03mm	±0.03mm	±0.03mm	±0.03mm
Pressure range	4…7bar	4…7bar	4…7bar	4…7bar	4…7bar	4…7bar	4…7bar
Piston diameter	25mm	25mm	25mm	25mm	25mm	25mm	25mm
Temperature range	0…50°C	0…50°C	0…50°C	0…50°C	0…50°C	0…50°C	0…50°C
Net weight	1.8kg	2kg	2.1kg	2.3kg	2.4kg	2.6kg	2.8kg





4.4.5 Linear Axis EDM25EL

Technical Data	EDM 25-100 EL	EDM 25-200 EL	EDM 25-300 EL	EDM 25-360 EL
Drive method	electrical, linear motor	electrical, linear motor	electrical, linear motor	electrical, linear motor
Stroke	100mm	200mm	300mm	360mm
Maximum speed	5.3m/s	5.3m/s	5.3m/s	5.3m/s
Peak force	137N	137N	137N	137N
Permanent force	31N	31N	31N	31N
Useful load (centric)	5kg	4kg	3kg	2.5kg
Repeatability	± 0.05mm	± 0.05mm	±0.05mm	±0.05mm
-with external distance measurement system (10µm)	±0.01mm	±0.01mm	±0.01mm	±0.01mm
Temperature range	0…50°C	0…50°C	0…50°C	0…50°C
Net weight	2.2kg	2.7kg	3.2kg	3.5kg

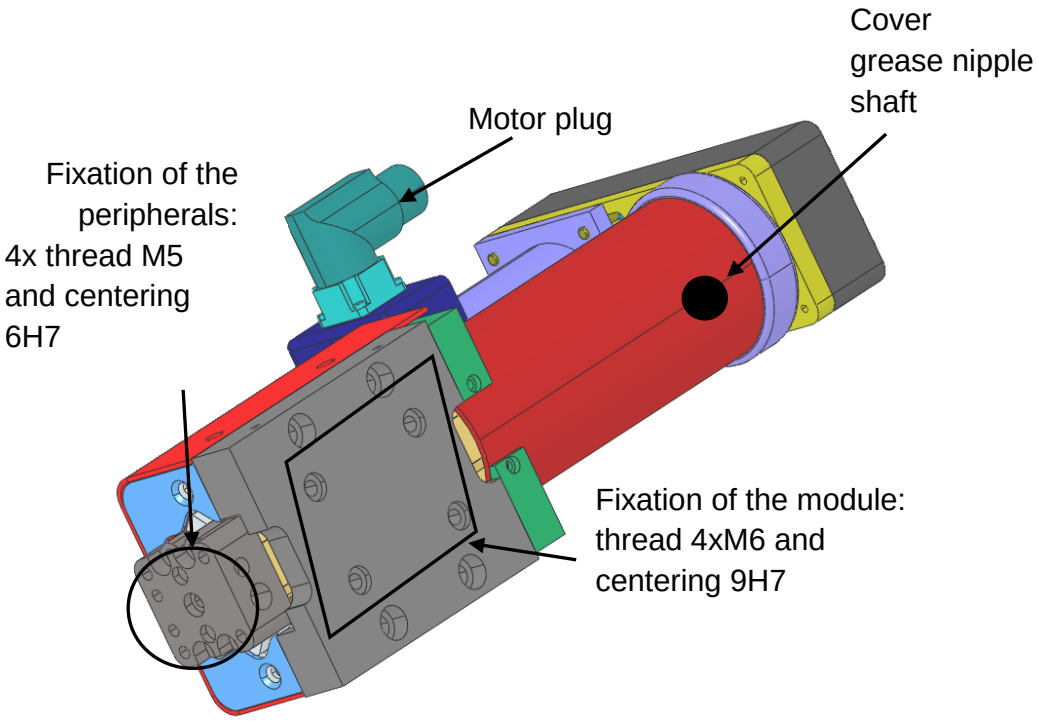


Attention

The tape of the external measuring system contains magnetic information. There must always be sufficient distance to other magnets.

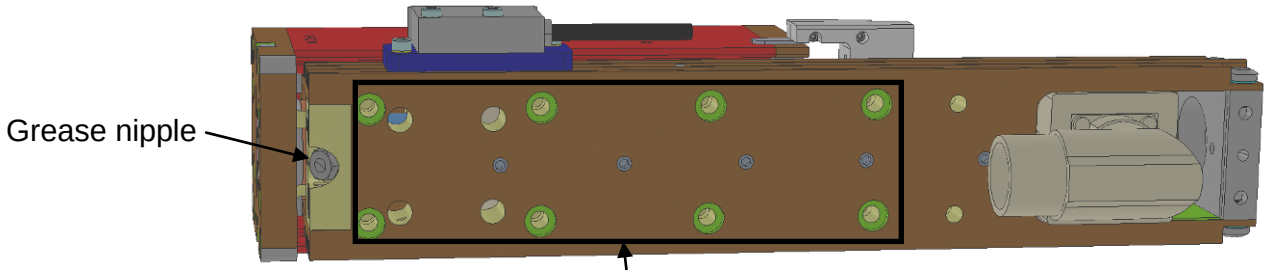
4.4.6 Linear Axis EDM25ES

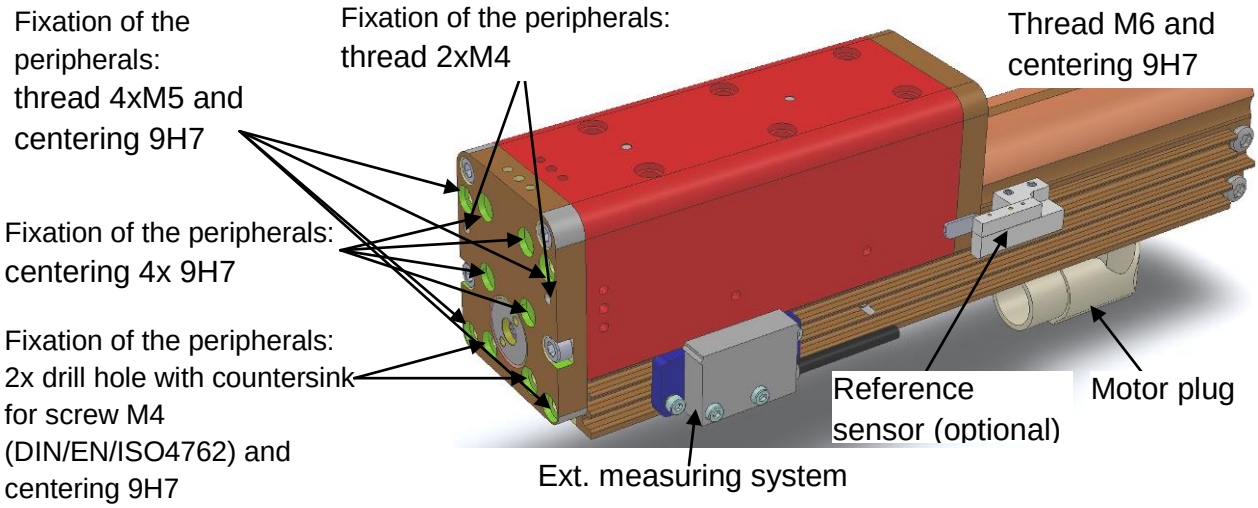
Technical Data	EDM 25-100 ES	EDM 25-200 ES	EDM 25-300 ES
Drive method	spindle drive	spindle drive	spindle drive
Stroke	100mm	200mm	300mm
Maximum speed	0.25m/s	0.25m/s	0.25m/s
Peak force	500N	500N	500N
Permanent force	350N	350N	350N
Useful load (centric)	5kg	4kg	3kg
Repeatability	± 0.05mm	± 0.05mm	±0.05mm
Temperature range	0…50°C	0…50°C	0…50°C
Net weight	2.9kg	3.3kg	3.7kg



4.4.7 Linear Axis EDM30EL

Technical Data	EDM 30-50 EL	EDM 30-100 EL	EDM 30-200 EL	EDM 30-300 EL	EDM 30-400 EL	EDM 30-500 EL
Drive method	electrical, linear motor	electrical, linear motor	electrical, linear motor	electrical, linear motor	electrical, linear motor	electrical, linear motor
Stroke	50mm	100mm	200mm	300mm	400mm	500mm
Maximum speed	3.2m/s	3.2m/s	3.2m/s	3.2m/s	3.2m/s	3.2m/s
Peak force	255N	255N	255N	255N	255N	255N
Permanent force	51N	51N	51N	51N	51N	51N
Useful load (centric)	10kg	10kg	8kg	6kg	5kg	4kg
Repeatability	± 0.05mm	± 0.05mm	±0.05mm	±0.05mm	±0.05mm	±0.05mm
-with external distance measurement system (1µm)	±0.01mm	±0.01mm	±0.01mm	±0.01mm	±0.01mm	±0.01mm
Temperature range	0…50°C	0…50°C	0…50°C	0…50°C	0…50°C	0…50°C
Net weight	3.0kg	3.4kg	4.2kg	5.4kg	6.2kg	7.0kg



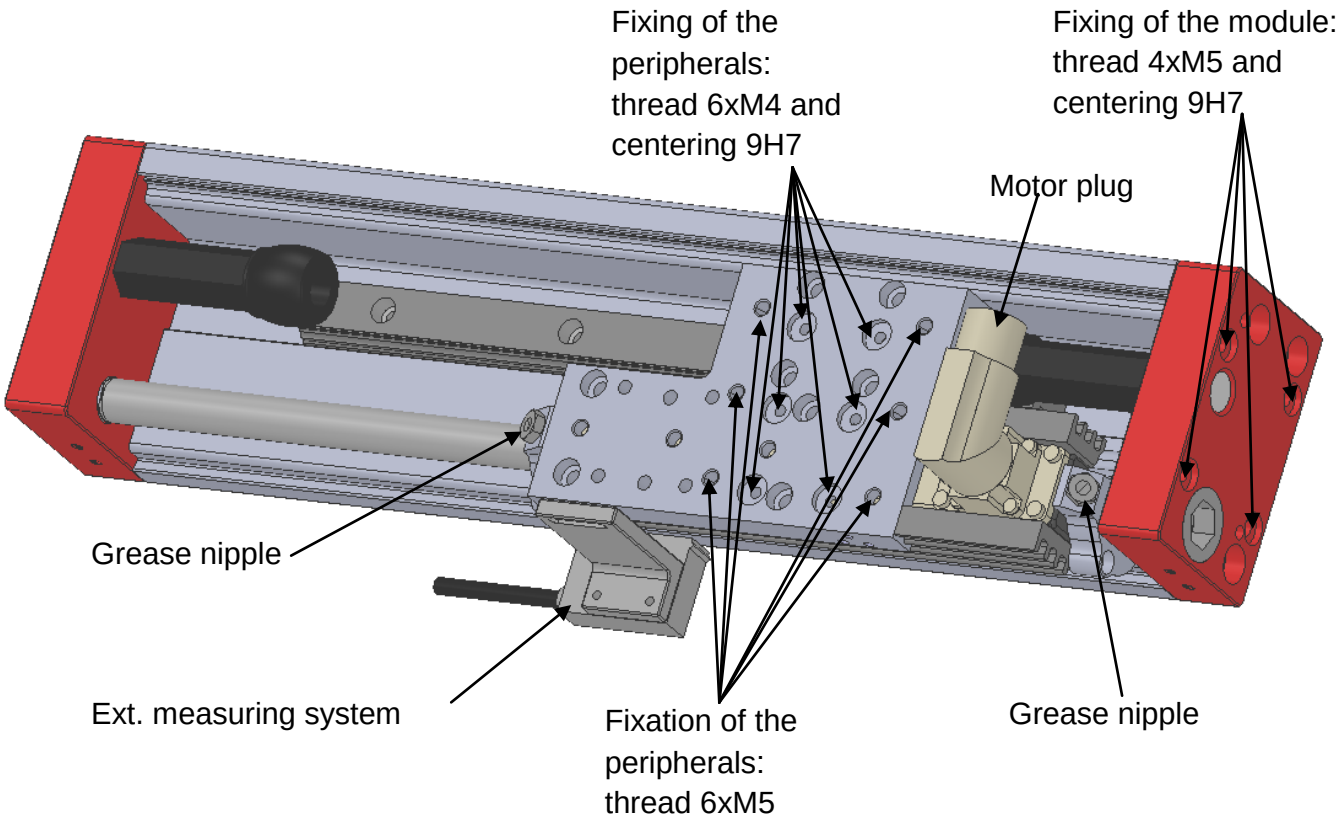


Attention

The tape of the external measuring system contains magnetic information. There must always be sufficient distance to other magnets.

4.4.8 Portal Axis PM20EL

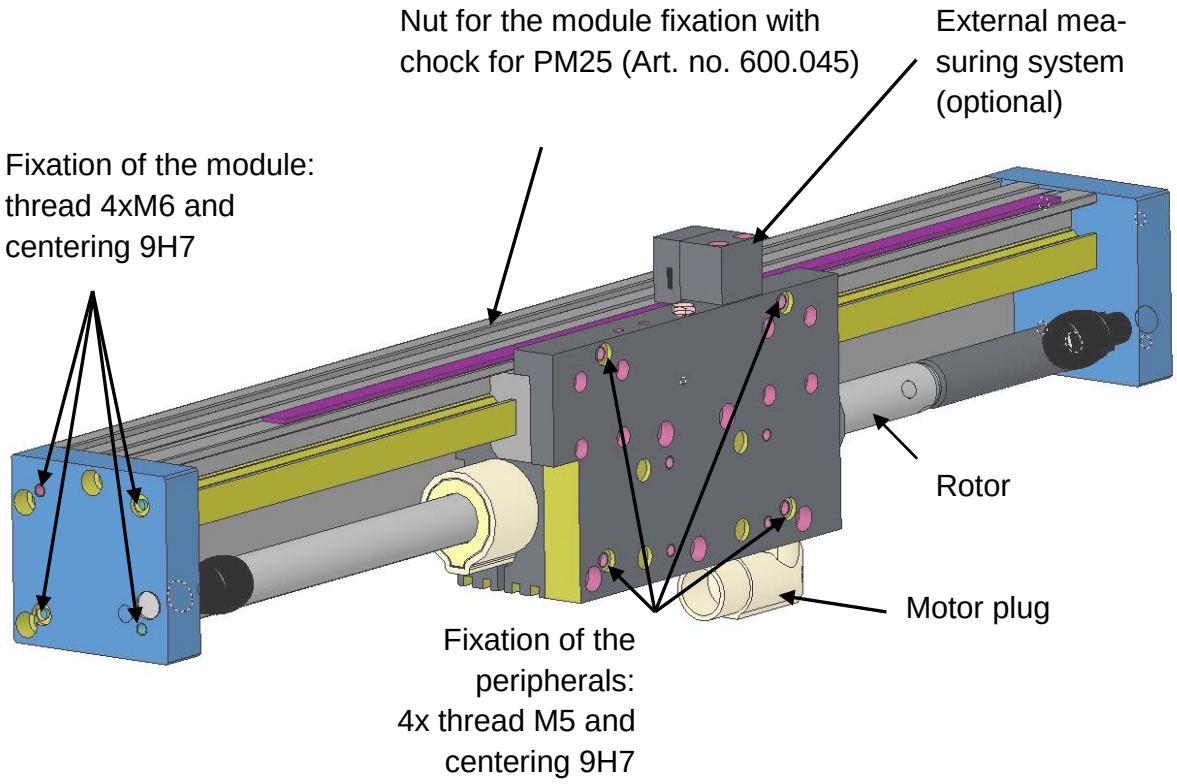
Technical Data	PM 20 EL	PM 20 EL-SL
Drive method	electrical, linear motor	electrical, linear motor
Stroke	110,170,270,450,540	135,205,265,365,545,635
Maximum speed	4.8m/s	6.8m/s
Peak force	137N	67N
Permanent force	31N	15N
Useful load (centric)	10kg	5kg
Repeatability	± 0.05mm	± 0.05mm
-with external distance measurement system (10µm)	±0.01mm	±0.01mm
Temperature range	0…50°C	0…50°C
Net weight	3.25kg+0.5kg per 100mm stroke	2.23kg+0.5kg per 100mm stroke



4.4.9 Portal Axis PM25EL

Technical Data	PM 20 EL
Drive method	electrical, linear motor
Stroke	90,150,250,350,450,550,1450mm*[1] 130,230,330,430,530,630,730,930, 1130,1330mm*[2]
Maximum speed	3.2m/s
Peak force	255N
Permanent force	51N
Useful load (centric)	25kg
Repeatability	± 0.05mm
-with external distance measurement system (10µm)	±0.01mm
Temperature range	0…50°C
Net weight	4.4kg+0.75kg per 100mm stroke

*1 only without wiper
*2 without wiper +20mm stroke



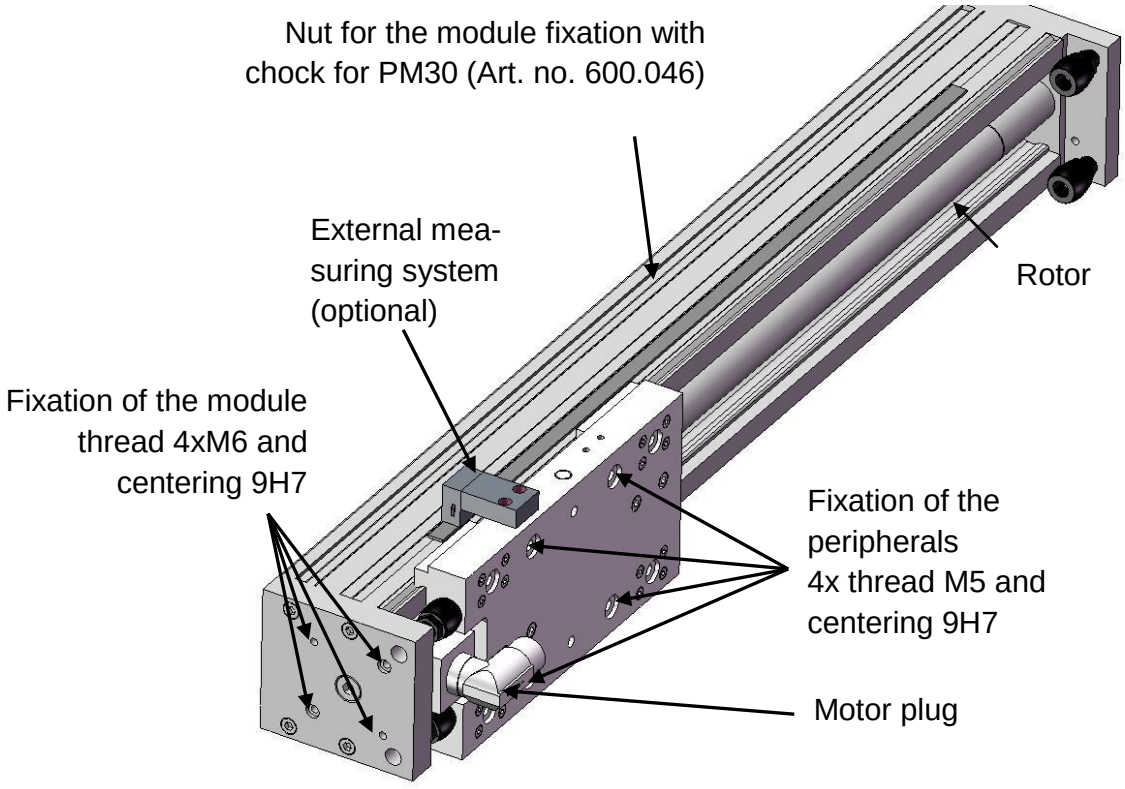
Attention

The tape of the external measuring system contains magnetic information. There must always be sufficient distance to other magnets.

4.4.10 Portal Axis PM30EL

Technical Data	PM 30 EL	PM 30 EL-HP
Drive method	electrical, linear motor	electrical, linear motor
Stroke	170,230,320,440,530,1820mm*1 150,270,360,450,570,660,870,1050, 1260,1470,1650mm*2	200,320,410,1700mm*1 150,240,330,450,540,750,930,1140, 1350,1530mm*2
Maximum speed	3m/s	2m/s
Peak force	550N	1024N
Permanent force	145N	203N
Useful load (centric)	50kg	50kg
Repeatability	± 0.05mm	±0.05mm
-with external distance measurement system (10µm)	±0.01mm	±0.01mm
Temperature range	0…50°C	0…50°C
Net weight	6.3kg+1.5kg per 100mm stroke	6.3kg+1.5kg per 100mm stroke

*1 only without wiper
*2 without wiper +20mm stroke

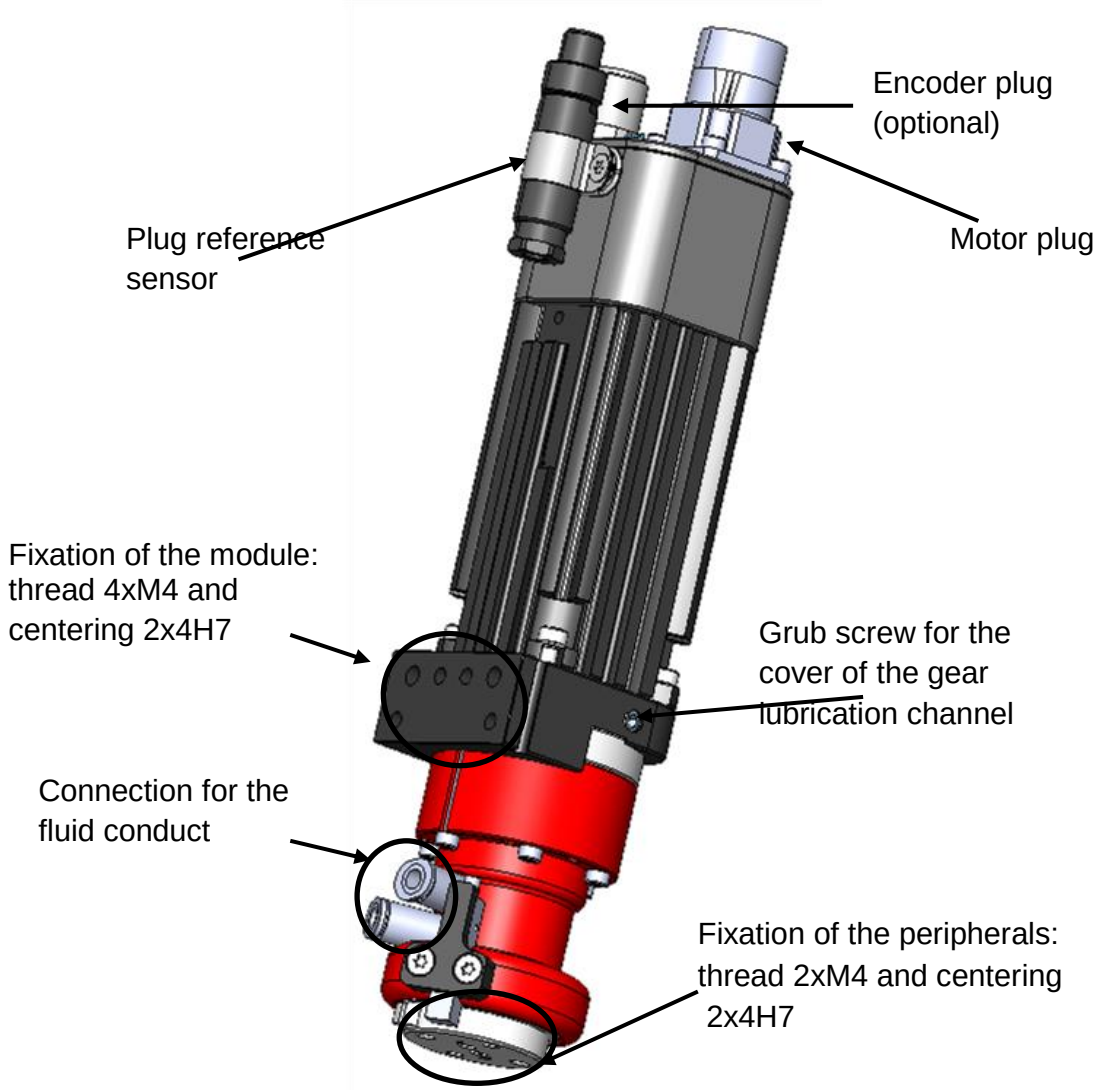


Attention

The tape of the external measuring system contains magnetic information. There must always be sufficient distance to other magnets.

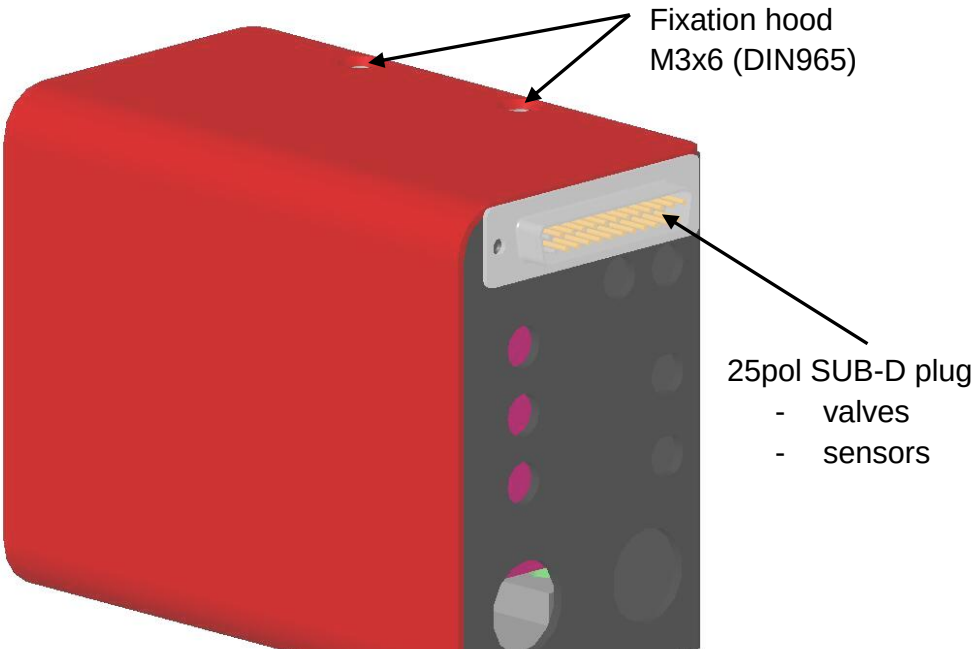
4.4.11 Place Unit SE20-E

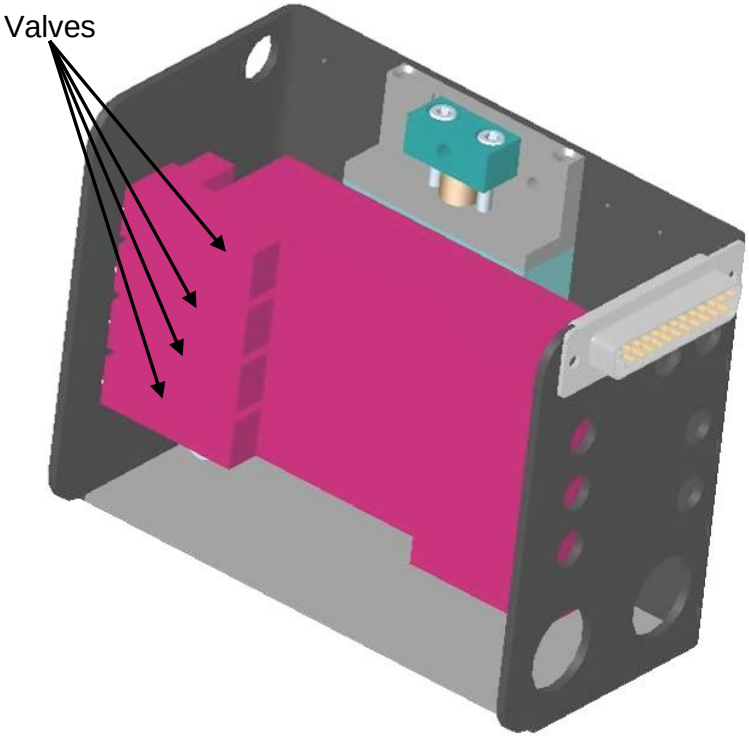
Technical Data	SE 20 E-2-50	SE 20 E-2-30	SE 20 E-4-50	SE 20 E-4-30
Fluid bushings	2	2	4	4
Reduction	50:1	30:1	50:1	30:1
Drive method	electrical	electrical	electrical	electrical
Rotation angle	∞	∞	∞	∞
Max. rpm	140min^{-1}	280min^{-1}	140min^{-1}	280min^{-1}
Maximum rotational speed	840°/s	1700°/s	840°/s	1700°/s
Maximum acceleration	30000°/s	20000°/s	30000°/s	20000°/s
Peak torque	4Nm	2.4Nm	4Nm	2.4Nm
Permanent torque	2Nm	1.2Nm	2Nm	1.2Nm
Press -in force	550N	550N	550N	550N
Repeatability	±0.0017°	±0.0017°	±0.0017°	±0.0017°
Temperature range	0…50°C	0…50°C	0…50°C	0…50°C
Net weight	0.55kg	0.55kg	0.6kg	0.6kg
Encoder (optional)	5V-TTL ABZ 25600 Inc/U	5V-TTL ABZ 15360 Inc/U	5V-TTL ABZ 25600 Inc/U	5V-TTL ABZ 15360 Inc/U
Air purity class (ISO 146441)	5	5	5	5



Control Block EDS standard and maxi

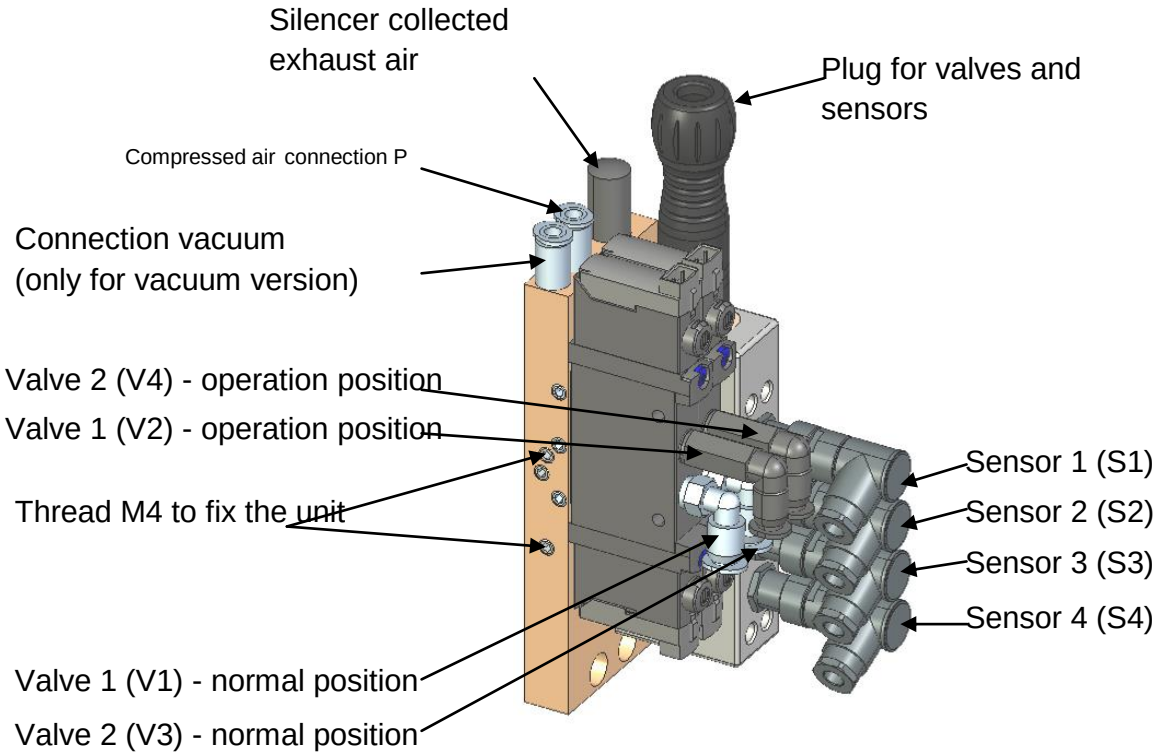
Technical Data	
Operating pressure	4…7bar
Compressed air quality	Filtered 40µm, oil-free or oiled
Temperature range	0…50°C
Supply connection	Quick connects d=6mm
Electrical connection	25-pole, Sub-D
Valve positions	6

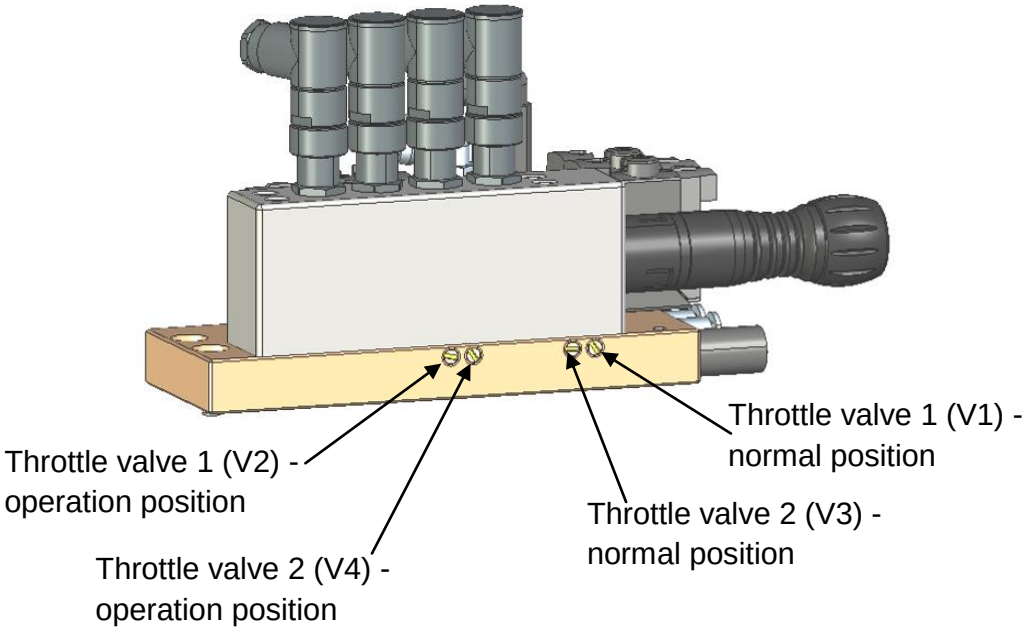




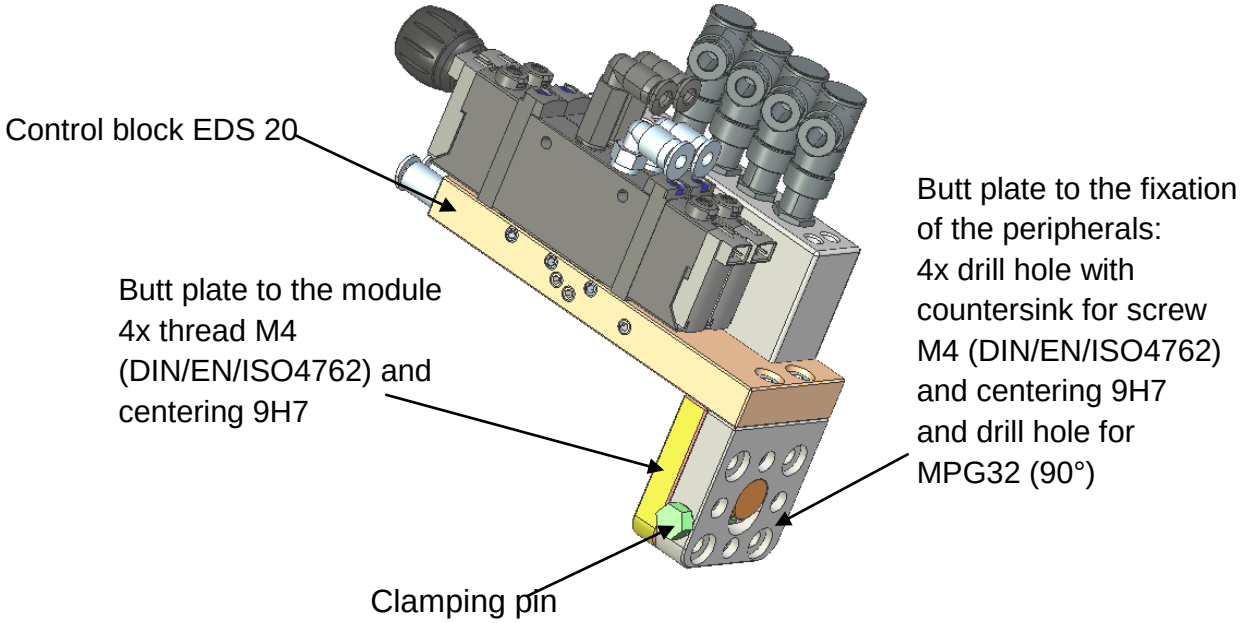
4.4.12 Control Block EDS 20

Technische Daten		
Operating pressure	4..7	Bar
Operating voltage	19..28	V
Compressed air quality	filtered 40µm, oil-free or oiled	
Temperatur range	0..50	°C
Supply connection	D=4	mm
Quick connects	12pol pole Binder series 720 Snap-in	
Valve positions	2	pieces
Sensor sockets	4	pieces



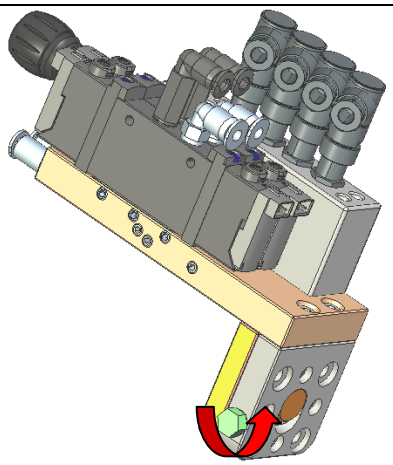
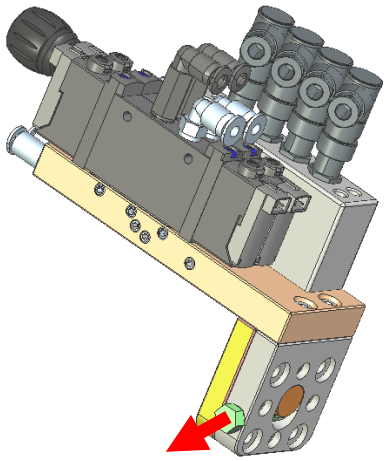
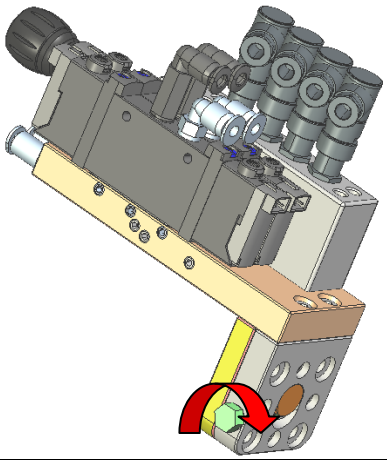
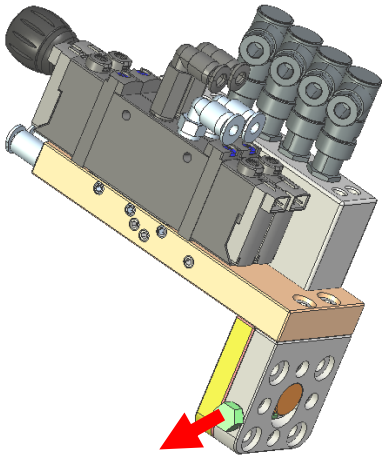
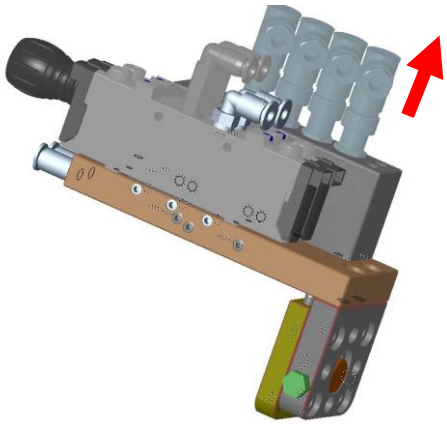
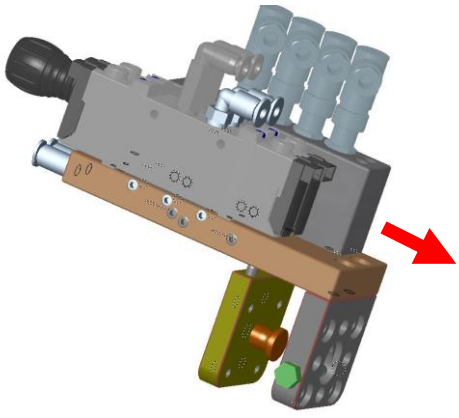


4.4.13 Quick Change Unit ESW 20

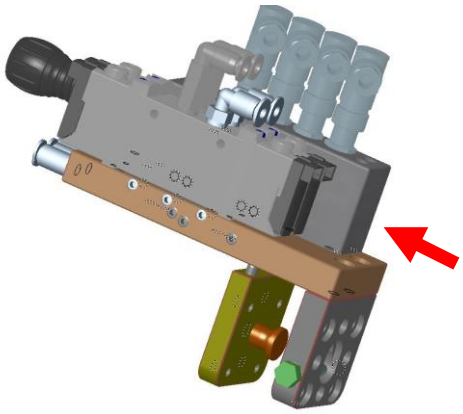
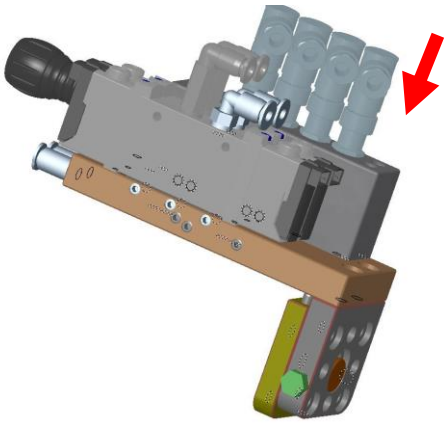
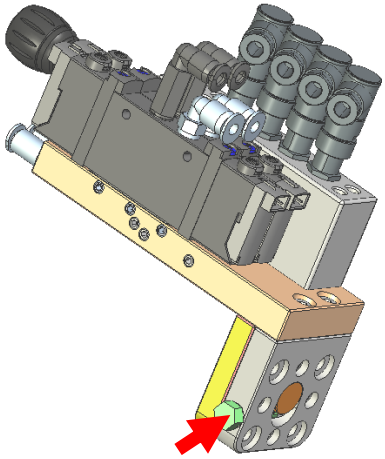
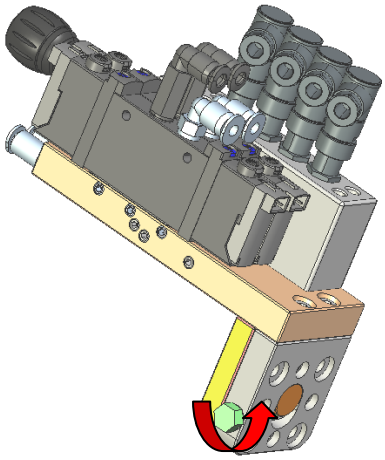
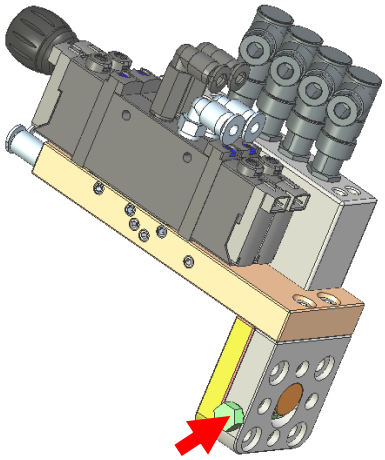
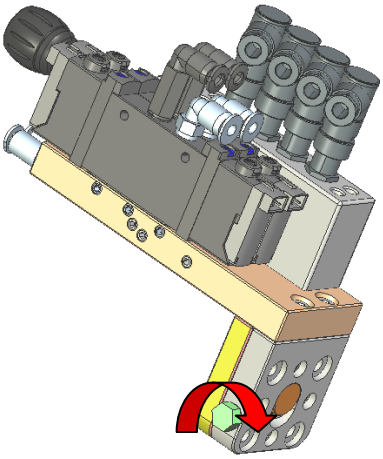


4.4.13.1 Tool Exchange

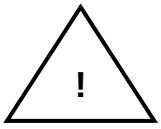
4.4.13.1.1 Removal

1. Turn the clamping pin for 90° counter-clockwise (with an 8mm open-end wrench).	2. Pull out the clamping pin until you feel resistance (about 3mm).
	
3. Turn the clamping pin for 90° clockwise (with an 8mm open-end wrench).	4. Pull out the clamping pin until you feel resistance (about 5mm).
	
5. Pull the unit to the front.	6. Pull the unit downside and remove it.
	

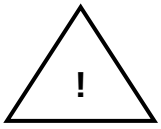
4.4.13.1.2 Fixing

1. Push the unit upwards.	2. Push the unit backwards.
	
3. Slide the clamping pin in until you feel resistance (about 5mm).	4. Turn the clamping pin for 90° counter-clockwise (with an 8mm open-end wrench).
	
5. Slide the clamping pin in until you feel resistance (about 3mm).	6. Turn the clamping pin for 90° clockwise (with an 8mm open-end wrench).
	

5 Assembly



Attention
The pick-and-place- device EDP is a fine mechanical. Therefore, the necessary diligence and cleanness have to be regarded during the assembly and adjustment.



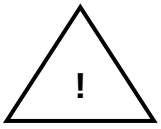
Attention
Only original cables by LinMot may be used for the operation of the electrical axes. Otherwise damages respectively disturbances might occur.

Assembly on a Panel
EDP mini
The EDP mini is fixed at the backside of the slide on a panel or an alternative bracket with 6 threads M4.

EDP standard and maxi
The EDP standard and maxi is fixed at the backside of the slide on a panel or an alternative bracket with 4 threads M6.

EDP Portal standard and maxi
EDP standard and maxi XYZ
EDP area gantry
For these systems, 2 variations of assembly are available.

1. The system is fixed by means of 2x4 threads M6 in the end plates of a panel or an alternative bracket (only recommended for short axes up to 400mm).
2. The system is fixed by means of special chocks (quantity depending on masses and lengths) on a panel or an alternative bracket.
   Chock PM25 Art. no. 600.045
   Chock PM30 Art. no. 600.046



Attention
The supporting surface must be even (milled) because otherwise tensions in the base plate caused by tightening the screws could lead to an early outage of the bearing.

Assembly of the peripherals at the vertical module
EDP mini and standard systems:
Fixing with 4 x screws M4
Centering with 4 x Ø 9H7

EDP maxi systems:
Fixing with 4 x screw M5
Centering with 2 x Ø 6H7

Centering
To insure a repeatedly accurate assembly after dismantling, there are center holes at the EDP.
The provided eccentric rings can be purchased under the following part numbers:
Ø 9 H7: part number 500.118
Ø 6 H7: part number 500.121

6 Connection

6.1 *Power Supplies*

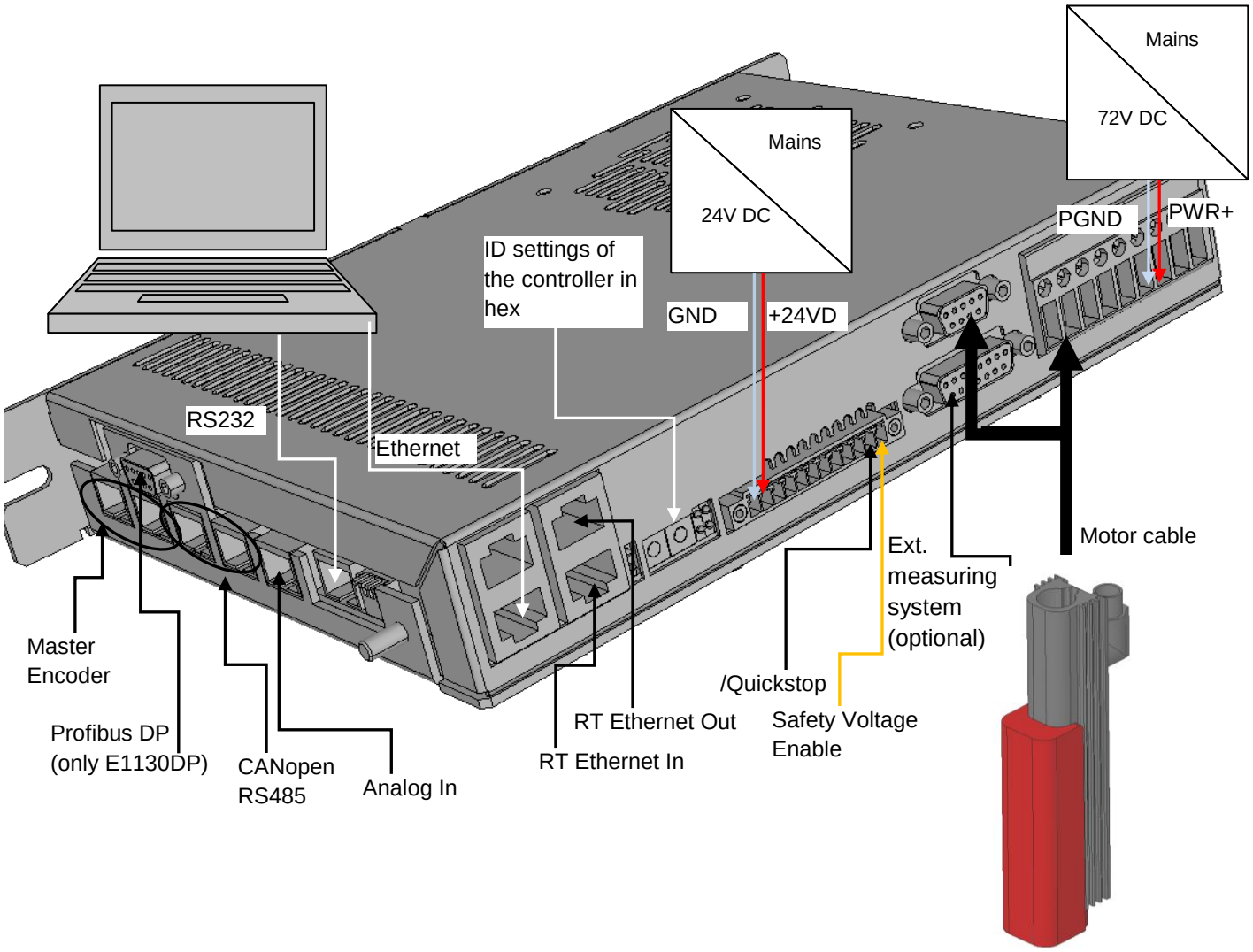
Short overview of technical data of the power supplies. Please, take exact assembly information from the operation instructions of the power supply.

Technical Data	SPH500-7207	SPH1013-7214	NT01-72/1500 Multi
Type	Primary switched power supply	Primary switched power supply	Transformer power supply
Primary voltage	90-132VAC, 50/60Hz or 180-264VAC, 50/60Hz(automatic switch)	3x340-550VAC, 50/60Hz	3x230/400/480VAC, 50/60Hz
Secondary voltage	54-80 VDC adjustable	54-80VDC adjustable	72V DC
Output power	480W	960W	1500W
Peak output current(>0.5s)	10A	27A	50 A
Efficiency	88%	91,5%	85% (at nominal power)
Protection class	IP 20	IP 20	IP 20
Operating temperature	-25…70°C	-25…70°C	0…40°C
Mass	1kg	2kg	17kg
Measurements (HxWxD)	125x62x121mm	230x66x177mm	275x280x165mm
External fuse	6A (C,D,K type)	16-32A (C,D,K type)	8A (C,D,K type)

6.2 *Axis Control E12x0*

Short overview of the interfaces of the controller E12x0. Please, take exact assembly information from the operation instructions of the controller.
The controllers are preconfigured so that normally no software adjustment is necessary. If you still have to execute an adjustment, you can download the software LinMot-Talk 1100 free of charge on the webpage www.linmot.com.

Technical Data	E1230-DP-UC	E1250-EC-UC	E1250-PL-UC	E1250-SE-UC
Logic voltage	24V DC	24V DC	24V DC	24V DC
Motor voltage supply	24V…80V DC	24V…80V DC	24V…80V DC	24V…80V DC
Max. output current motor (at 72V)	standard execution: 32A	standard execution: 32 A	standard execution: 32 A	standard execution: 32 A
Bus systems interfaces	Profibus CANopen DeviceNet RS485/232 Digital I/Os Master Encoder	EtherCat CANopen DeviceNet RS485/232 Digital I/Os Master Encoder	PowerLink CANopen DeviceNet RS485/232 Digital I/Os Master Encoder	Sercos over Ethercat CANopen DeviceNet RS485/232 Digital I/Os Master Encoder
Max. power consumption	30W	30W	30W	30W
Protection class	IP 20	IP 20	IP 20	IP 20
Operating temperature	0…40°C	0…40°C	0…40°C	0…40°C
Mass	1.5kg	1.5kg	1.5kg	1.5 kg
Distance between controls	20mm left/right 50mm down/up	20mm left/right 50mm down/up	20mm left/right 50mm down/up	20mm left/right 50mm down/up
Fuse protection 72V supply	20 AT	20 AT	20 AT	20 AT
Fuse protection 24V supply	32 AT	32 AT	32 AT	32 AT



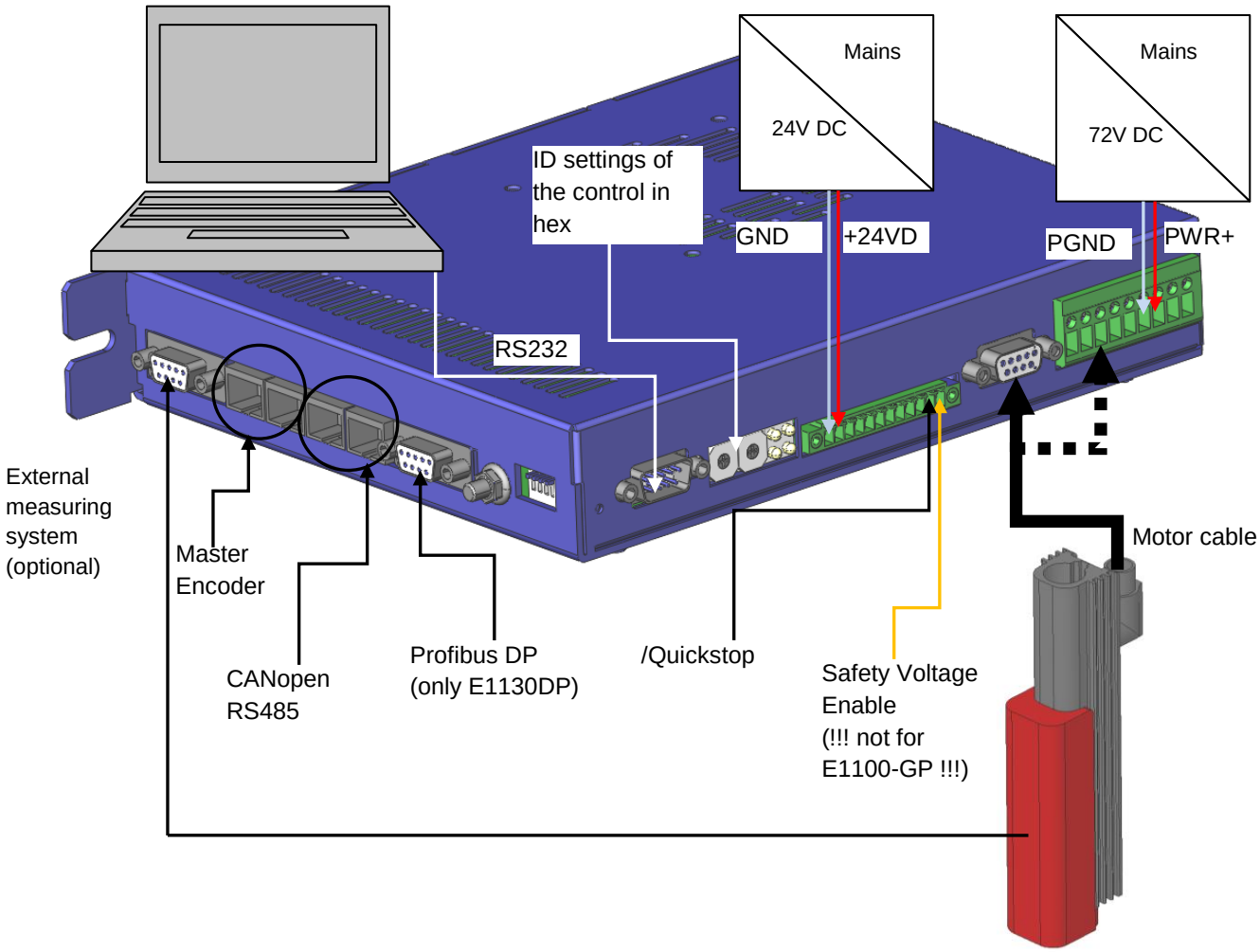
Connection	Description
X1 PWR+	Motor power supply +72VDC
X1 PGND	Motor power supply GND
X2	Motor phases
X3	Motor signals
X4.12	Safety Voltage Enable
X4.11	/Quickstop
X4.7	Reference sensor (optional)
X14.2	Logic power supply +24VDC
X14.1	Logic power supply GND

Danger in case of open protecting door
Concerning the controller E12x0, the entry Safety Voltage Enable (X4.12) must be disconnected or the power supply (72V) must be disconnected safely at the primary side.

6.3 *Axis Control E11x0*

Short overview of the interfaces of the controller E11x0. Please take the exact installation information from the operation instruction of the controller.
The controllers are preconfigured so that normally no software adjustment is necessary. If you still have to execute an adjustment, you can download the software LinMot-Talk 1100 free of charge on the webpage www.linmot.com.

Technical Data	E1230-DP-UC	E1250-EC-UC
Logic voltage	24V DC	24V DC
Motor voltage supply	24V…80V DC	24V…80V DC
Max. output current motor (at 72V)	standard execution: 32A HC execution: 15A XC execution: 25A	standard execution: 32 A HC execution: 15A XC execution: 25A
Bus systems interfaces	CANopen DeviceNet RS485/232 16 digital inputs 8 digital outputs 9 digital in´-/outputs	Profibus CANopen DeviceNet RS485/232 Digital I/Os Master Encoder
Max. power consumption	30W	30W
Protection class	IP 20	IP 20
Operating temperature	0…40°C	0…40°C
Mass	1.5kg	1.5kg
Distance between controls	20mm left/right 50mm down/up	20mm left/right 50mm down/up
Fuse protection 72V supply	10 AT(for standard control) 16 AT(for HC/XC control)	10 AT(for standard control) 16 AT(for HC/XC control)
Fuse protection 24V supply	2 AT	2 AT



Connection	Description
X1 PWR+	Motor power supply +72VDC
X1 PGND	Motor power supply GND
X2	Motor phases (optional for HC or XC controllers)
X3	Motor signals
X6	Digital IO interface (only E1100-GP, not in the picture)
X4.12	Safety Voltage Enable (!!! not for E1100-GP !!!)
X4.11	/Quickstop
X4.7	Reference sensor (optional)
X14.2	Logic power supply +24VDC
X14.1	Logic power supply GND

Danger in case of opened protecting doors

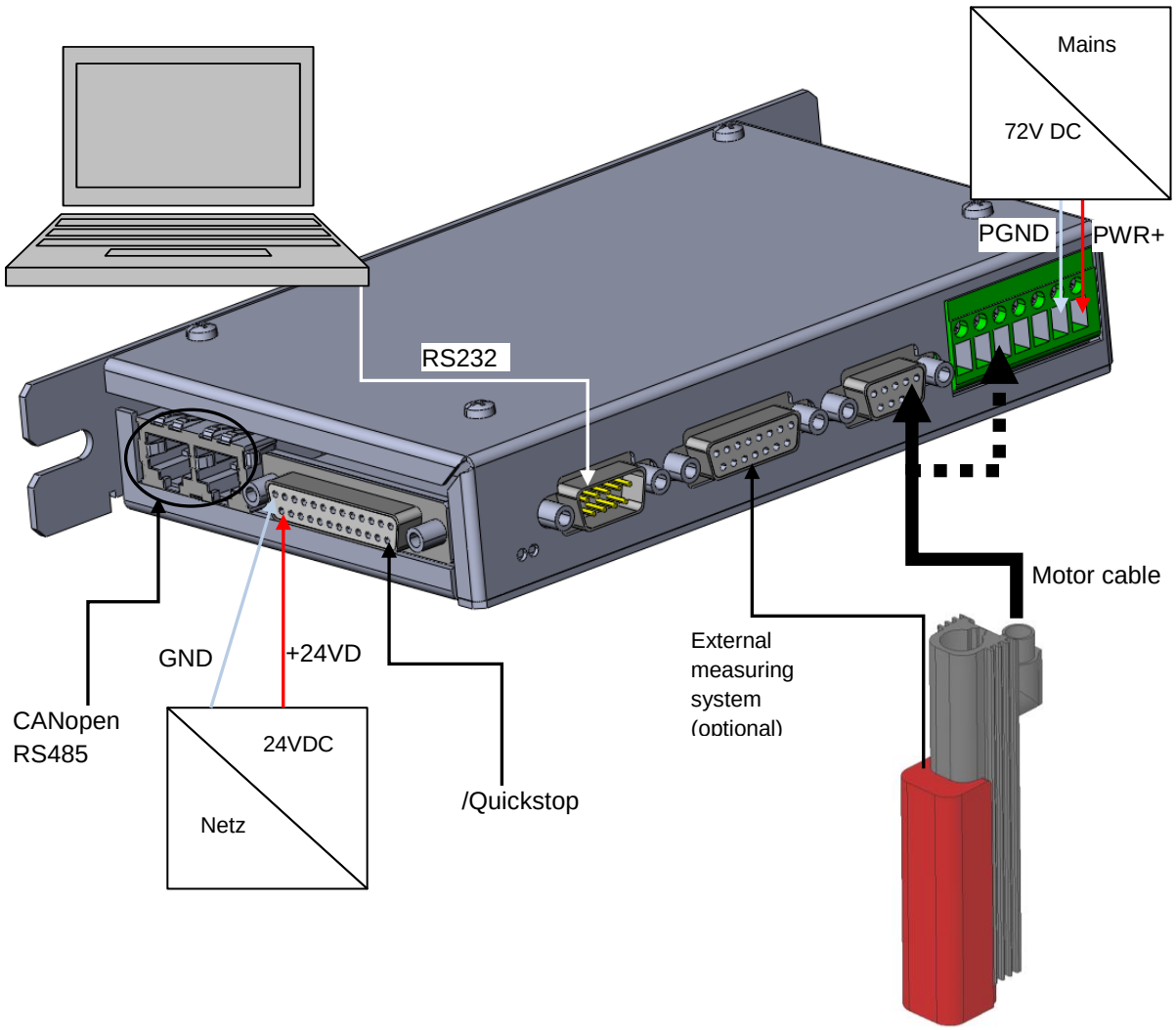
Concerning the controller E11x0 (with exception of E1100-GP, the entry Safety Voltage Enable (X4.12) must be disconnected.

Concerning the controller E1100-GP, the power supply (72V) must be disconnected safely at the primary side (This is also permitted for the other controller variations).

6.4 *Axis Control B1100*

Short overview of the interfaces of the controller B1100. Please take the exact installation information from the operation instruction of the controller.
The controllers are preconfigured so that normally no software adjustment is necessary. If you still have to execute an adjustment, you can download the software LinMot-Talk 1100 free of charge on the webpage www.linmot.com.

Technical Data	E1230-DP-UC	E1250-EC-UC
Logic voltage	24V DC	24V DC
Motor voltage supply	24V…80V DC	24V…80V DC
Max. output current motor (at 72V)	standard execution: 8A HC execution: 15A XC execution: 25A	standard execution: 8A HC execution: 15A XC execution: 25A
Bus systems interfaces	6 digital inputs 6 digital outputs (up to 4 positions)	CANopen DeviceNet RS485/232 6 digital inputs 6 digital outputs
Max. power consumption	30W	30W
Protection class	IP 20	IP 20
Operating temperature	0…40°C	0…40°C
Mass	0.7kg	0.7kg
Distance between controls	20mm left/right 50mm down/up	20mm left/right 50mm down/up
Fuse protection 72V supply	10 AT(for standard control) 16 AT(for HC/XC-control)	10 AT(for standard control) 16 AT(HC/XC control)
Fuse protection 24V supply	2 AT	2 AT

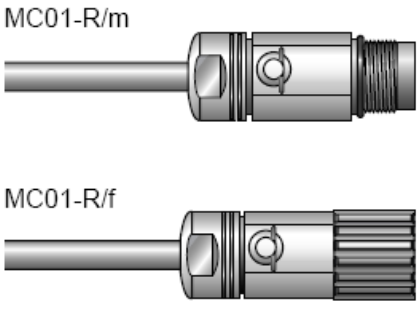


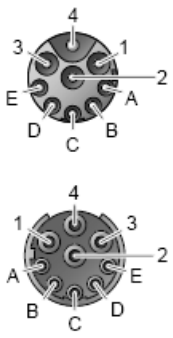
Connection	Description
X1 PWR+	Motor power supply +72VDC
X1 PGND	Motor power supply GND
X2	Motor phases (optional bei HC oder XC controller n)
X3	Motor signals
X14.14	/Quickstop
X14.2	Reference sensor (optional)
X14.25	Logic power supply +24VDC
X14.13	Logic power supply GND

Danger in case of opened protecting door
Concerning the controller B1100, the power supply (72V) must be disconnected safely at the primary side

6.5 *Pin Assignment and Electrical Connection Data of the Motor*

6.5.1 Motor Plug EDM 20EL, EDM 25EL



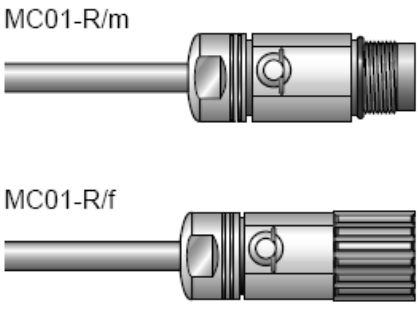


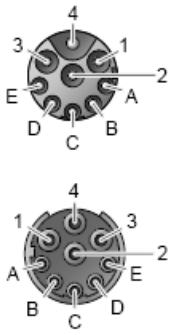
PIN	Function	Colour
1	Phase 1+	red
2	Phase 1-	pink
3	Phase 2+	blue
4	Phase 2-	grey
A	+5V	white
B	GND	inner screen
C	Sensor sinus	yellow
D	Sensor cosinus	green
E	Temp. sensor	black
Housing	Screen	outer screen

Electrical motor data

Phase 1+ / Phase 1-	4 Ω
Phase 2+ / Phase 2-	4 Ω
+5V / GND	505 Ω
Sensor sinus/ GND	37.5kΩ
Sensor cosinus/ GND	37.5kΩ
Temp. sensor / GND	10.5kΩ
All phases / GND	>20MΩ
All pins / screen	>20MΩ

6.5.2 Motor Plug EDM25ES, SE30E, SE40E



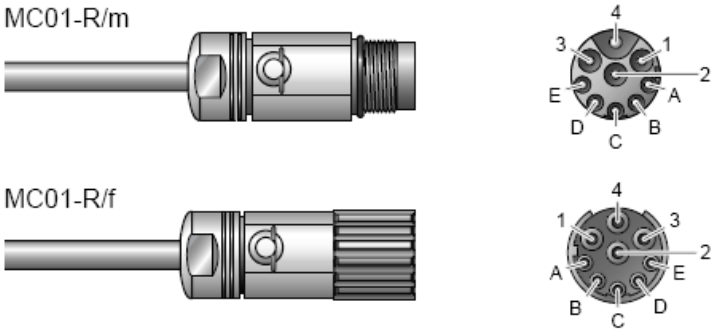


PIN	Function	Colour of motor	Colour of cable
1	Phase A	brown	red
2	Phase B	orange	pink
3	Phase C	yellow	blue
4	free	-	grey
A	+5V	red	white
B	GND	black	in. creen
C	Hall A	green	yellow
D	Hall B	blue	green
E	Hall C	grey	black
Housing	Screen	-	out. screen

Electrical motor data

All phases/ All phases	0.8 Ω
+5V / GND	6.3 kΩ
Sensor Hall A / GND	>20MΩ
Sensor Hall B / GND	>20MΩ
Sensor Hall C / GND	>20MΩ
All phases / GND	>20MΩ
All pins / Screen	>20MΩ

6.5.3 Motor Plug SE20E

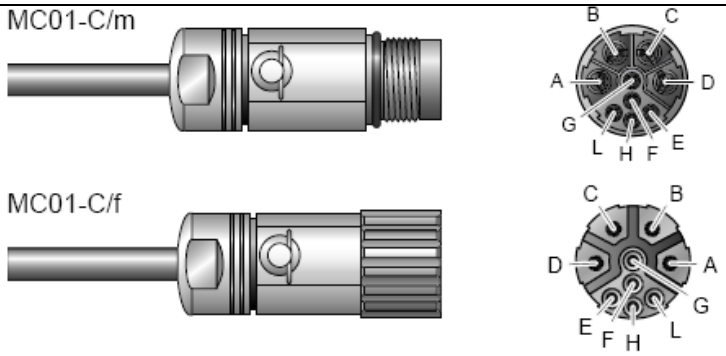


PIN	Function	Conduction ribbon cable	Colour of cable
1	Phase A	3	red
2	Phase B	2	pink
3	Phase C	1	blue
4	free	-	grey
A	+5V	5	white
B	GND	4	in. screen
C	Hall A	8	yellow
D	Hall B	7	green
E	Hall C	6	black
Housing	Screen	-	out. screen

Electrical motor data

All phases/ All phases	4 Ω
+5V / GND	6.3 kΩ
Sensor Hall A / GND	>10MΩ
Sensor Hall B / GND	>10MΩ
Sensor Hall C / GND	>10MΩ
All phases / GND	>20MΩ
All pins / Screen	>20MΩ

6.5.4 Motor Plug PM25/PM30



PIN	Function	Colour
A	Phase 1+	red
B	Phase 1-	pink
C	Phase 2+	blue
D	Phase 2-	grey
E	+5V	white
F	GND	inner screen
G	Sensor sinus	yellow
H	Sensor cosinus	green
L	Temp. sensor	black
Housing	Screen	outer screen

Electrical motor data PM25

Phase 1+ / Phase 1-	2.6 Ω
Phase 2+ / Phase 2-	2.6 Ω
+5V / GND	155 Ω
Sensor sinus/ GND	33kΩ
Sensor cosinus/ GND	33kΩ
Temp. sensor / GND	10kΩ
All phases / GND	>20MΩ
All pins / Screen	>20MΩ

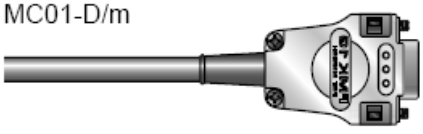
Electrical motor data PM30

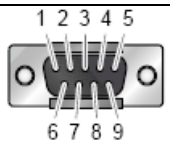
Phase 1+ / Phase 1-	1.1 Ω
Phase 2+ / Phase 2-	1.1 Ω
+5V / GND	155 Ω
Sensor sinus/ GND	33kΩ
Sensor cosinus/ GND	33kΩ
Temp. sensor / GND	10kΩ
All phases / GND	>20MΩ
All pins / Screen	>20MΩ

6.6 *Pin Assignment Motor Cable*

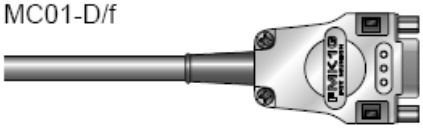
6.6.1 Plug Controller Power Option standard

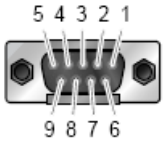
MC01-D/m





MC01-D/f

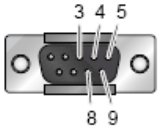




PIN	Function	Colour
1	Phase 1+	red
6	Phase 1-	pink
2	Phase 2+	blue
7	Phase 2-	grey
3	+5V	white
8	GND	inner screen
4	Sensor sinus	yellow
9	Sensor cosinus	green
5	Temp. sensor	black
Housing	Screen	outer screen

6.6.2 Plug Controller Power Option HC, XC and UC

MC01-W/m



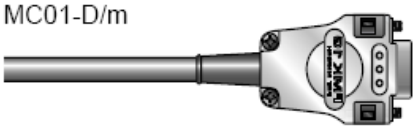
PIN	Funktion	Farbe
Strand red	Phase 1+	red
Strand pink	Phase 1-	pink
Strand blue	Phase 2+	blue
Strand grey	Phase 2-	grey
3	+5V	white
8	GND	inner screen
4	Sensor sinus	yellow
9	Sensor cosinus	green
5	Temp. sensor	black
Housing	Screen	outer screen

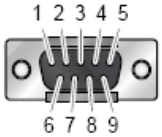
6.7 *Pin Assignment ext. Distance Measurement System*

6.7.1 Plug ext. Distance Measurement System MSK500

Controller E11x0 series

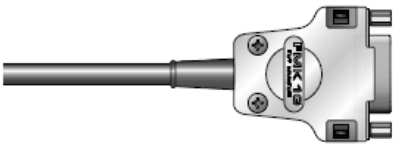
MC01-D/m

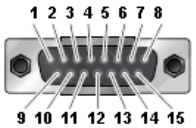




PIN	Function	Colour
1	+5V	brown
2	A-	yellow
3	B-	green
4	Z-	violet
5	GND	black
6	A+	red
7	B+	orange
8	Z+	blue
9	free	-
Housing	Screen	outer screen

Controller B1100 and E12x0 series



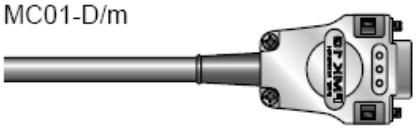


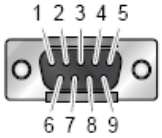
PIN	Function	Colour
1	+5V	brown
2	A-	yellow
3	B-	green
4	Z-	violet
5	GND	black
6	free	-
7	free	-
8	free	-
9	A+	red
10	B+	orange
11	Z+	blue
12	free	-
13	free	-
14	free	-
15	free	-
Housing	Screen	outer screen

6.7.2 Plug ext. Distance Measurement System LE100 (for safely reduced speed)

Controller E11x0 series

MC01-D/m



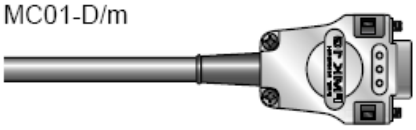


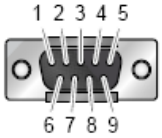
PIN	Function	Colour
1	+5V	brown
2	SIN-	orange
3	COS-	green
4	Z-	violet
5	GND	black
6	SIN+	red
7	COS+	yellow
8	Z+	blue
9	free	-
Housing	Screen	outer screen

6.8 *Pin Assignment Encoder SE20E*

Controller E11x0 series

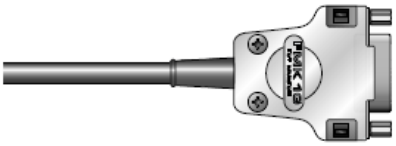
MC01-D/m

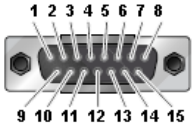




PIN	Function	Colour
1	+5V	brown
2	A-	green
3	B-	red
4	Z-	violet
5	GND	blue
6	A+	yellow
7	B+	orange
8	Z+	black
9	free	-
Housing	Screen	outer screen

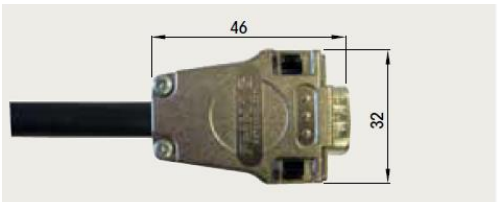
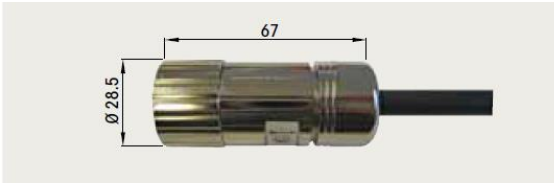
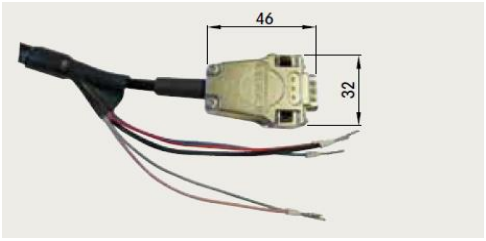
Controller B1100 and E12x0 series





PIN	Function	Colour
1	+5V	brown
2	A-	green
3	B-	red
4	C-	violet
5	GND	blue
6	free	-
7	free	-
8	free	-
9	A+	yellow
10	B+	orange
11	Z+	black
12	free	-
13	free	-
14	free	-
15	free	-
Housing	Screen	outer screen

6.9 *Plug Sizes*

Plug combination	
Plug at the axis	Plug at the control
R-Plug:  Application: -Linear axis EDM 20 EL -Linear axis EDM 25 EL -Linear axis EDM 25 ES -Rotation axis SE 20 E	D-Plug:  Application: -Control B1100 standard -Control E11x0 standard
C-Plug:  Application: -Linear axis EDM 30 EL -Portal module PM 25 EL -Portal module PM 30 EL	W-Plug:  Application: -Control B1100 HC and XC -Control E11x0 HC and XC -Control E12x0 UC

Compressed air connection

Danger of collision
When the compressed air is switched on, quick movements of the devices might occur!

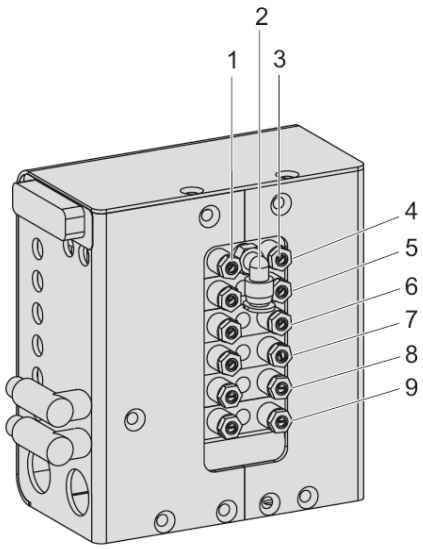
The control block has a compressed air connection. For special cases, single valves can be equipped with a separate connection.

6.9.1 Pin Assignment

Function	*BC640*	*12-pol.*	*Cable colour*	*G*	*C*	*Vac*
				Gripping	***Turning***	***Vacuum***
S1	E 0.4	5	grey	Gripper open	C1-left	free
S2	E 0.5	6	pink	Gripper closed	C1-right	Part available
V1	A 0.4	1	white	Open gripper	C1- left	blow
V2	A 0.5	2	brown	Close gripper	C1-right	suck
S3	E 0.6	7	blue	free	free	free
S4	E 0.7	8	red	free	free	free
V3	A 0.6	3	green	free	free	free
V4	A 0.7	4	yellow	free	free	free
	free	9	black	free	free	free
	free	10	violet	free	free	free
Sensors (+)	+24V	11	grey pink			
Valves sensors	GND	12	red blue			

Function	*BC640*	*12-pol.*	*Cable colour*	*G,G*	*C,G*	*C,Vac*
				Gripping	***Turning***	***Turning***
S1	E 0.0	5	grey	Gripper open	C1-left	C1-left
S2	E 0.1	6	pink	Gripper closed	C1-right	C1-right
V1	A 0.0	1	white	Open gripper	C1-left	C1-left
V2	A 0.1	2	brown	Close gripper	C1-right	C1-right
				Gripping	***Gripping***	***Vacuum***
S3	E 0.2	7	blue	Gripper open	Gripper open	free
S4	E 0.3	8	red	Gripper closed	Gripper closed	Part available
V3	A 0.2	3	green	Open gripper	Open gripper	blow
V4	A 0.3	4	yellow	Close gripper	Close gripper	suck
	free	9	black	free	free	free
	free	10	violet	free	free	free
Sensors (+)	+24V	11	grey pink			
Valves sensors	GND	12	red blue			

6.10 *Control Block EDS standard and maxi*



1. Throttle for extension
2. Compressed air connection
3. Throttle to retraction
4. horizontal
5. vertical
6. Option 1(e.g. turning)
7. Option 2(e.g. gripping)
8. Option 3
9. Option 4

Compressed air connection

Danger of collision

When the compressed air is switched on, quick movements of the devices might occur!

The control block has a compressed air connection. For special cases, single valves can be equipped with a separate connection.

6.10.1 Pin Assignment

The standard assignment of the control block: If an axis is constructed electrically, the applicable contacts are free.
If none of these assignments is applicable, a special connection plan is added to the documentation.

Function	***Intern*** (for assembly kit standard and maxi_2	***BC640***	***25-pol. Sub-D***	***Cable colour***	***Y,Z,G***	***Y,Z,Vac***	***Y,Z,C,G***
					Y-Axis	***Y-Axis***	***Y-Axis***
S1	sw-u	E 0.0	1	white	Y-extended	Y-extended	Y-extended
S2	sw-o	E 0.1	2	brown	Y-retracted	Y-retracted	Y-retracted
V1		A 0.0	9	black	Y-retract	Y- retract	Y- retract
V2		A 0.1	10	violet	Y-extend	Y- extend	Y- extend
					Z-Axis	***Z-Axis***	***Z-Axis***
S3	sw	E 0.2	3	green	Z-up	Z-up	Z-up
S4	sw	E 0.3	4	yellow	Z-down	Z-down	Z-down
V3		A 0.2	11	grey pink	Z-upwards	Z- upwards	Z- upwards
V4		A 0.3	12	red blue	Z-downwards	Z- downwards	Z- downwards
					Gripping	***Vacuum***	***Turning***
S5	green	E 0.4	5	grey	Gripper open	free	C1-left
S6	yellow	E 0.5	6	pink	Gripper closed	Part available	C1-right
V5		A 0.4	13	white green	Open gripper	blow (A4+A5)	C1-left
V6		A 0.5	25	white black	Close gripper	suck	C1-right
							Gripping / Vac
S7	grey	E 0.6	7	blue	free	free	Gripper open
S8	pink	E 0.7	8	red	free	free	Gripper closed
V7		A 0.6	24	brown red	free	free	Open gripper
V8		A 0.7	23	white red	free	free	Close gripper
S9	white	E 1.0	14	brown green	free	free	free
S10	red	E 1.1	15	white yellow	free	free	free
V9				*(for monostable)*			
V10		A 1.1	16	yellow brown	free	free	free
S11		E 1.2	19	white pink	free	free	free
S12		E 1.3	20	pink brown	free	free	free
V11				*(for monostable)*			
V12		A 1.3	17	white grey	free	free	free
Sensors (+)		+24V	18	grey brown			
Sensors(-)		GND	21	white blue			

Valves	GND	22	brown blue			

X,Y,Z,G	*X,Y,Z,C,G*	*Y,Z,Z-ZP,C,G*	*Y,Z,C,C,G,G*	*X,Y,Z,C,G,G*
Y-Axis	***Y-Axis***	***Y-Axis***	***Y-Axis***	***Y-Axis***
Y-extended	Y-extended	Y-extended	Y-extended	Y-extended
Y-retracted	Y-retracted	Y-retracted	Y-retracted	Y-retracted
Y-retract	Y-retract	Y-retract	Y-retract	Y-retract
Y-extend	Y-extend	Y-extend	Y-extend	Y-extend

Z-Axis	***Z-Axis***	***Z-Axis***	***Z-Axis***	***Z-Axis***
Z-up	Z-up	Z-up	Z-up	Z-up
Z-down	Z-down	Z-down	Z-down	Z-down
Z-upwards	Z-upwards	Z-upwards	Z-upwards	Z-upwards
Z-downwards	Z-downwards	Z-downwards	Z-downwards	Z-downwards

X-Axis	***X-Axis***	***with P3-module***	***Turning***	***X-Axis***
X-right	X-right	Z-ZP extended	C1-left	X-right
X-left	X-left	Z-ZP retracted	C1-right	X-left
X-right	X-right	Z-ZP retract	C1-left	X-right
X-left	X-left	Z-ZP extend	C1-right	X-left

Gripping / Vac	***Turning***	***Turning***	***Turning***	***Turning***
Gripper open	C1-left	C1-left	C1-left	C1-left
Gripper closed	C1-right	C1-right	C1-right	C1-right
Open gripper	C1-left	C1-left	C1-left	C1-left
Close gripper	C1-right	C1-right	C1-right	C1-right

	Gripping	***Gripping / Vac***	***Gripping***	***Gripping***
free	Gripper open	Gripper open	Gripper open	Gripper open
free	Gripper closed	Gripper closed	Gripper closed	Gripper closed
	Open gripper	Open gripper	Open gripper	Open gripper
free	Close gripper	Close gripper	Close gripper	Close gripper

			Gripping	***Gripping***
free			Gripper open	Gripper open
free			Gripper closed	Gripper closed
			Open gripper	Open gripper
free			Close gripper	Close gripper

6.11 *Power Strip*

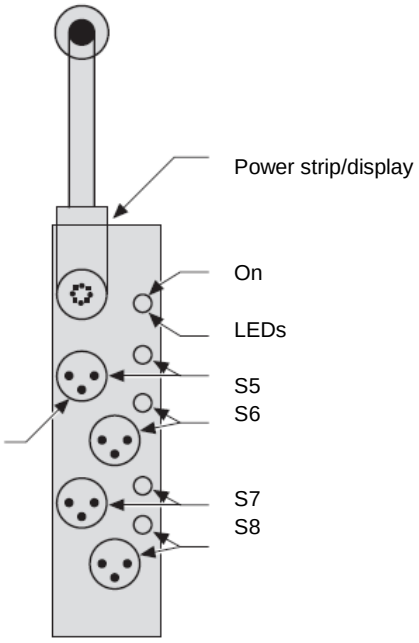
The Power strip at the cable duct offers three essential functions:

- Connection of the sensors of the peripherals
- Display 24 V supply
- Display of the switching states of the sensors

4 sensors with joint supply can be connected with the power strip. For more extensive peripherals, a power strip with 6 sockets is available. 6 sensors are wired in the connection cable. The signals of the 4 (6) sensor sockets are combined on an 8-pole plug. The connection cable goes through the hose to the 25 pole sub-D plug at the valve block.

Compatible:
Angle plug 3-pole 080.212 (Binder: 7681 99-3385-00-03)

Assignment of the Power strip



Function	Socket 8-pole PIN	Cable	SubD 25-pole PIN
+	4	brown	18
-	8	blue	21
S5	5	green	5
S6	6	yellow	6
S7	7	grey	7
S8	3	pink	8
S9	2	white	14
S10	1	red	15

Assignment of the sockets (3-pole):

PIN	Cable	Function
1	brown	+
2	black	Signal
3	blue	-

7 Commissioning

7.1 *Setting the Speeds at the Electrical Axes*

The speeds of the electrical axes are usually specified by the primary control.
There are example programs for many common controls. Maximum speed, acceleration as well as the target position can be specified with them. These programs are included on the CD enclosed to the delivery, or you can download it under http://eps-automation.de/de/software.html.
For the use of the controllers B1100-PP or E1100-GP with Firmware EasyStep, these travel profiles are filed in the controller.

Attention
Too high speed or acceleration can cause damages of the device or the peripherals.

The following charts are intended to serve as reference for the parameters (speed, acceleration and deceleration).
Please consider that the standard parameters may not fit for your practice. They very much depend on the load mass and the mechanical construction.

Type	Maximum speed [m/s]	Maximum acceleration [m/s2]	Maximum deceleration [m/s2]	Standard speed [m/s]	Standard acceleration [m/s2]	Standard deceleration [m/s2]	Maximum position [mm]	Maximum position [mm]
SE20E-x-50-x	0.84	30	30	0.84	20	20	∞	∞
SE20E-x-30-x	1.7	20	20	1.7	15	15	∞	∞
EDM20-50EL	7.3	120	120	3	15	15	50	0
EDM20-100EL	5.3	80	80	3	10	10	100	0
EDM20-200EL	5.3	60	60	3	10	10	200	0
EDM20-300EL	5.3	40	40	3	10	10	300	0
SM20-50EL	7.3	120	120	3	15	15	50	0
SM20-100EL	5.3	80	80	3	10	10	100	0
SM20-200EL	5.3	60	60	3	10	10	200	0
SM20-300EL	5.3	40	40	3	10	10	300	0
EDM25-100EL	5.3	80	80	3	10	10	100	0
EDM25-200EL	5.3	60	60	3	10	10	200	0
EDM25-300EL	5.3	40	40	3	10	10	300	0
EDM25-360EL	5.3	40	40	3	10	10	360	0
EDM30-050EL	3.9	80	80	2	15	15	50	0
EDM30-100EL	3.9	80	80	2	15	15	100	0
EDM30-200EL	3.9	80	80	2	15	15	200	0
EDM30-300EL	3.9	80	80	2	15	15	300	0
EDM30-400EL	3.9	80	80	2	15	15	400	0
EDM30-500EL	3.9	80	80	2	15	15	500	0
EDM25-100ES	0.25	120	120	0.25	10	10	100	0
EDM25-200ES	0.25	120	120	0.25	10	10	200	0
EDM25-300ES	0.25	120	120	0.25	10	10	300	0

Type	Maximum speed [m/s]	Maximum acceleration [m/s2]	Maximum deceleration [m/s2]	Standard speed [m/s]	Standard acceleration [m/s2]	Standard deceleration [m/s2]	Maximum position [mm]	Maximum position [mm]
PM25-90 19E	3.9	80	80	2	15	15	90	0
PM25-150 19E	3.9	80	80	2	15	15	150	0
PM25-250 19E	3.9	80	80	2	15	15	250	0
PM25-350 19E	3.9	80	80	2	15	15	350	0
PM25-450 19E	3.9	80	80	2	15	15	450	0
PM25-550 19E	3.9	80	80	2	15	15	550	0
PM25-650 19E	3.9	80	80	2	15	15	650	0
PM25-130 20E HP	3.9	80	80	2	15	15	130	0
PM25-230 20E HP	3.9	80	80	2	15	15	230	0
PM25-330 20E HP	3.9	80	80	2	15	15	330	0
PM25-430 20E HP	3.9	80	80	2	15	15	430	0
PM25-530 20E HP	3.9	80	80	2	15	15	530	0
PM25-630 20E HP	3.9	80	80	2	15	15	630	0
PM25-730 20E HP	3.9	80	80	2	15	15	730	0
PM25-930 20E HP	3.9	80	80	2	15	15	930	0
PM25-1130 20E HP	3.9	80	80	2	15	15	1130	0
PM25-1330 20E HP	3.9	80	80	2	15	15	1330	0
PM25-1450 20E HP	3.9	80	80	2	15	15	1450	0
PM30-170 27E	3	80	80	2	15	15	170	0
PM30-230 27E	3	80	80	2	15	15	230	0
PM30-320 27E	3	80	80	2	15	15	320	0
PM30-440 27E	3	80	80	2	15	15	440	0
PM30-530 27E	3	80	80	2	15	15	530	0

Type	Maximum speed [m/s]	Maximum acceleration [m/s2]	Maximum deceleration [m/s2]	Standard speed [m/s]	Standard acceleration [m/s2]	Standard deceleration [m/s2]	Maximum position [mm]	Maximum position [mm]
PM30-50 28E	3	80	80	2	15	15	50	0
PM30-150 28E	3	80	80	2	15	15	150	0
PM30-270 28E	3	80	80	2	15	15	270	0
PM30-360 28E	3	80	80	2	15	15	360	0
PM30-450 28E	3	80	80	2	15	15	450	0
PM30-570 28E	3	80	80	2	15	15	570	0
PM30-660 28E	3	80	80	2	15	15	660	0
PM30-870 28E	3	80	80	2	15	15	870	0
PM30-1050 28E	3	80	80	2	15	15	1050	0
PM30-1260 28E	3	80	80	2	15	15	1260	0
PM30-1470 28E	3	80	80	2	15	15	1470	0
PM30-1650 28E	3	80	80	2	15	15	1650	0
PM30-1820 28E	3	80	80	2	15	15	1820	0
PM30HP-0200 27E	2.1	80	80	1.5	15	15	200	0
PM30HP-0320 27E	2.1	80	80	1.5	15	15	320	0
PM30HP-0410 27E	2.1	80	80	1.5	15	15	410	0
PM30HP-0150 28E	2.1	80	80	1.5	15	15	150	0
PM30HP-0320 28E	2.1	80	80	1.5	15	15	320	0
PM30HP-0450 28E	2.1	80	80	1.5	15	15	450	0
PM30HP-0540 28E	2.1	80	80	1.5	15	15	540	0
PM30HP-0750 28E	2.1	80	80	1.5	15	15	750	0
PM30HP-0930 28E	2.1	80	80	1.5	15	15	930	0
PM30HP-1140 28E	2.1	80	80	1.5	15	15	1140	0
PM30HP-1350 28E	2.1	80	80	1.5	15	15	1350	0
PM30HP-1530 28E	2.1	80	80	1.5	15	15	1530	0
PM30HP-1700 28E	2.1	80	80	1.5	15	15	1700	0

7.2 *Teaching of Positions at the Electrical Axes*

First the way must be referenced. Then the following possibilities are given:

Possibility 1 manual movement:
Move the axes manually into their position (logic voltage ON, power motor OFF), and then read the value from the controller to take it for the pick & place movement.

Danger

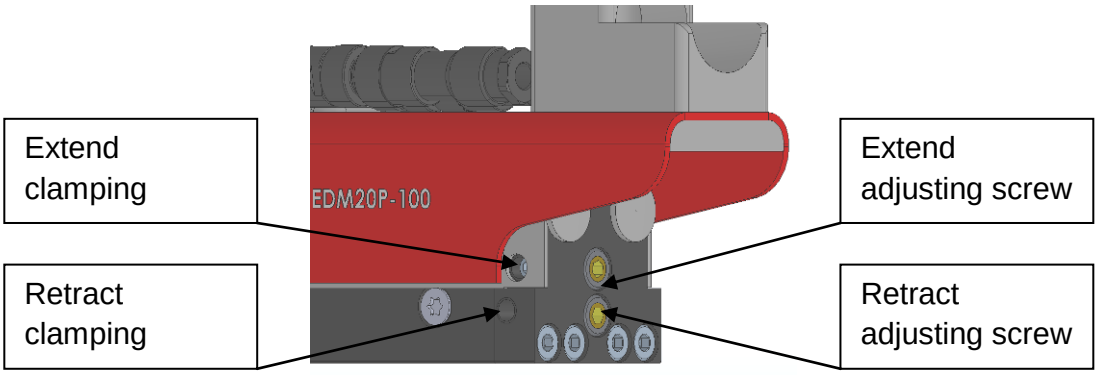
Concerning the controller B1100 or E1100-GP, the power supply (72V) must be disconnected at the primary side.
Concerning the controller E11x0 (not E1100-GP), the inlet Safety Voltage Enable (X4.12) must be switched off or the power supply (72V) must be disconnected at the primary side.

Possibility 2 tip operation:

- Buttons +/-10mm | +/- 1mm | +/- 1/10mm available in the HProg.
- Add or subtract the value to the current position value.
- Can be programmed via relative order.
  The existing component for the absolute positioning can be changed into one for relative positioning by changing a variable.

Possibility 3:
Setting with safely reduced speed. Please, regard the manual for the safely reduced speed.

7.3 *Stroke Adjustment EDM 20P*



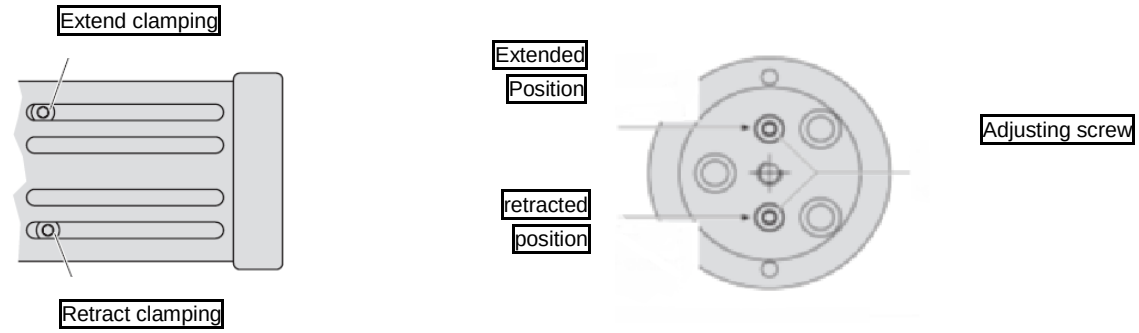
1. Release the clamping screw
2. Turn the adjusting screw into the required direction
3. Tighten the clamping screw

Direction of rotation of the adjusting screw:
right: retract
left: extend

Gradient of the adjusting screw:
0.5 mm/ revolution

Stroke adjustment:
max. 50mm

7.4 *Stroke Adjustment EDM25*



Warning
Do not use defective/ worn tools because the adjustment screws are preloaded. Tighten the clamping screws of the modules before further operation of the modules.

1. Release the clamping screw for the required direction
2. Turn the adjustment screw into the required direction.
3. Tighten the clamping screw

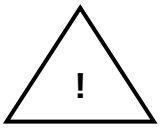
Assignment of the adjustment screw:
up: extend
down: retract

Direction of rotation of the adjusting screw:
right: retract
left: extend

Gradient of the adjusting screw:
1mm/ revolution

Stroke adjustment:
Please, take the stroke adjustment of the single EDM 25-variations from our current product catalogue.

7.5 *Damping settings at the pneumatic modules*



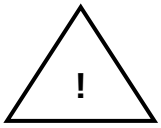
Attention
An incorrectly set end position damping can cause damages of the device or of the peripherals.

The pneumatic EDM modules have an integrated pneumatic end position damping.
The effect of the end position damping can be adjusted by means of a throttle screw. Assignment of the throttles see picture EDM 20P and EDM 25. The damping is adjusted to delivery condition by the manufacturer, as far as no other specifications are given. It must be controlled and corrected by the user during the commissioning if necessary.
Especially when the mass, the speed or the supply pressure are changed, a control is absolutely obligatory.

Adjustment
The damping is correctly adjusted when the modules are stopped short before the end position and move to the end position with a low residual energy:

- If a module springs back before the final position is reached, and then moves to the end position strongly:
  → Turn the throttle screw to the left (open).

- If a module moves to the end position strongly without springing back, the damping is set too weak:
  →Turn the throttle screw to the right (close).

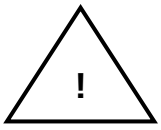


Attention
If the integrated pneumatic damping is not sufficient, the speed must be reduced or the electronic damping must be used.

7.6 *Adjusting Speed at the Pneumatic Modules*

The speeds are usually adjusted to the required cycle time by the manufacturer. The adjustment is executed by means of throttles at the exhaust air exits at the control block.
If you have no control block in operation, you can adjust the speed by means of exhaust air throttles.

Valve activation



Attention
5/3- directional valves my **not** be activated as impulse valves because the modules move against an empty volume in case of a small leak. Due to the high speed and poor damping, damages of the module will occur.

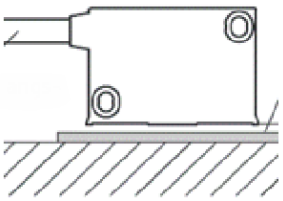
7.7 *Adjustment of the external Distance Measurement System*

7.7.1 Distance sensor - tape

The sensor is mounted parallel to the tape with a feeler gauge. The distance between sensor and tape is different, depending on the applied type. Please, take the values from the chart below:

Sensor type	Distance min	Distance max	Recommended distance
LE100	0.1mm	0.2mm	0.1mm
MSK500	0.1mm	1.5mm	0.1mm
EMIX2/23	0.1mm	0.7mm	0.1mm

Direction of cable outlet



Active side

Distance sensor/ magnetic tape

7.7.2 Adjust Homeing Point

Der Abstand zwischen mechanischen Anschlag und dem Index auf dem Magnetband muss auf den Abstände in nachfolgender Tabelle eingestellt werden.

Sensor type	Recommended distance	Distance min	Distance max	Pole length
LE100	0.5 mm	0.3 mm	0.7 mm	1 mm
MSK500	2.5 mm	2.0 mm	3.0 mm	5 mm
EMIX2/23	1.0 mm	0.4 mm	0.7 mm	2 mm

Note:
This must be done so not from, and is recognized to be an index to early or too late when referencing the axis.
This would then result in a positional shift corresponding to the pole pitch of the belt.

To adjust the distance the procedure is as follows:
1. Described first configuration as described in the commissioning instructions for LinMot controllers perform.
In this case, set the "home position" on 0mm.
2. axis reference.
3. axis by taking away the "Switch ON" bits-energize.
4. Press 4 axis by hand to the mechanical stop.
5. Set the "Actual position" by moving the sensor so that the distance to be set with a negative sign appears.
(eg sensor MSK500, Home position = 0 mm ◊ Actual Position = -2.5 mm)
Note:
If the "home position" to a different value set, the corresponding offset for all reasonably needs to be taken into account.
(eg sensor MSK500, Home position = 50mm ◊ Actual position = 47.5 mm)
If the axis is set to "positive Homeing" the Anbstand must be added.
(eg sensor MSK500, Home position = 500mm ◊ Actual Position = 502.5 mm)
6. again to the reference axis and the axis control method setting

7.8 *Distance sensor switching flag*

7.8.1 Reference Sensor at Electrical Axes

The sensor is mounted parallel to the switching flag at a distance of 0.4mm by means of a feeler gauge. Please take the positions from the drawings below; they are different according to the axis type.

7.8.2 End Position Sensor at Pneumatic Modules

The sensor is mounted parallel to the switching flag at a distance of 0.4mm by means of a feeler gauge.

8 Maintenance

The EDP devices are high performance devices with very short cycle times. The durability of the devices substantially depends on the environmental conditions and the maintenance. Depending on the environmental conditions and the way of application we recommend:

8.1 *After Commissioning*

- Control if the screws are tightened.
- Clean the guidance with a slightly oily cloth.
- Control the adjustment of the damping.
- Control the adjustment of the guidance EDM 25.

8.2 *Quarterly*

EDM25

- Clean the guidance with a slightly oily cloth.
- Control the adjustment of the guidance EDM 25, adjust if necessary.

EDM25 EL

- Clean the guidance with a slightly oily cloth.
- Control the adjustment of the guidance EDM 25, adjust if necessary.
- Obey the linear motor instructions.

EDM25 ES

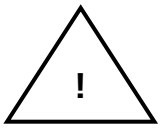
- Clean the guidance with a slightly oily cloth.
- Control the adjustment of the guidance EDM 25, adjust if necessary.
- Retract the axis completely.
- Remove the cover of the grease nipples.
- Press in grease by means of a grease pistol. (recommended: Klübersynth UH1 14-31 (Order no. 540.043) or grease with comparable characteristics)

EDM20P, EDM20EL, PM25, PM30

- Remove the cover respectively hood.
- Visual control of grease discoloration, respectively if there is still a small greasy film on the track. If necessary, additional grease must be applied.
- Fix the cover respectively hood again.
- Obey the linear motor instructions.

Lubricants with the following minimum requirements and specifications are permitted:

Lubricant	DIN label	DIN number	Remark
Lubricating grease	KP 2 – K	51502 respectively 51825	lithium soap grease
Lubricating oil	CLP32 – 100	51517 part 3	ISO VG 32-68



Lubricants with solid lubricant additives (e.g. MoS2, Graphit, PTFE)
are generally unsuitable for the use of THK-guide systems. If still any of these lubricants are applied, please contact THK.

SE30-E, SE40E

Press grease of the type Klübersynth UH1 14-31 (Order no. 540.043) through both air connections into the rotary lead-through.

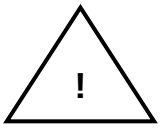
SE20-E

- Press grease of the type Klübersynth UH1 14-31 (Order no. 540.043) through both air connections into the rotary lead-through.
- Remove the grub screw of the channel cover to the gear lubrication.
- Fill in about 1-2 ml of grease with an injection.
- Re-fix the grub screw of the channel cover to the gear lubrication flush to the frontline.

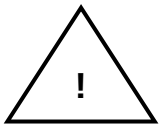
Linear motors:

• Linear motor axes with undersized rotor (diameter 19 or 27):
  - Clean the rotor

• Linear motor axes with wiper:
  - Clean the rotor
  - Fill the grease Klübersynth UH1 14-31 (Order no. 540.043) into a grease pistol and press it over the grease nipples of the axis.



Attention
Only the specified grease may be used for the lubrication of the linear motor axis.

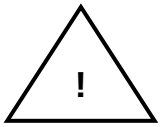


Attention
If unusual characteristics of movement are detected during the normal operation of the device, e.g. hard shocks, the immediate elimination of the cause is urgently necessary.

The maintenance - and service intervals are to be observed. The intervals refer to a normal environment. If the devices are placed in an environment with abrasive dusts or corrosive respectively aggressive vapors, gases or fluids during their operation, the agreement of the company. e·p·s GmbH has to be obtained.

9 Repairs

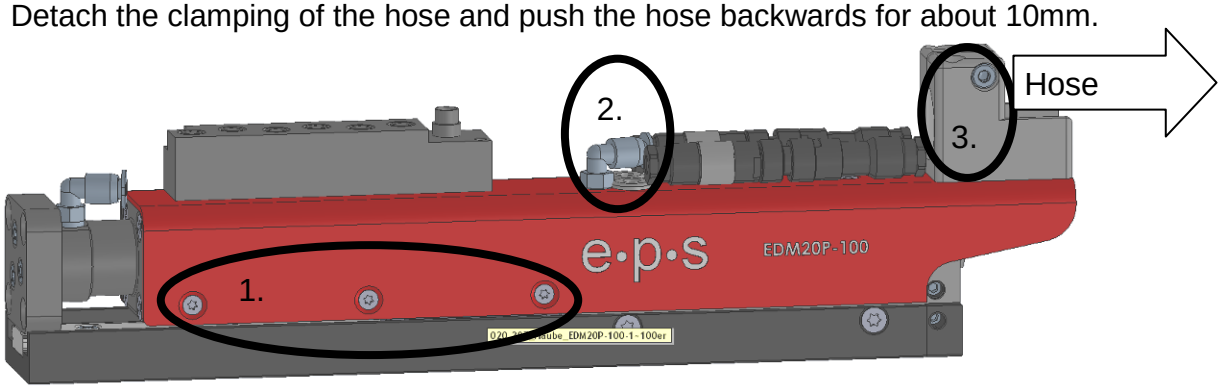
Any repairs besides the following may only be executed by the company e·p·s GmbH.
If you execute repair works by yourselves, the allowance of the company e·p·s GmbH has to be obtained in advance.



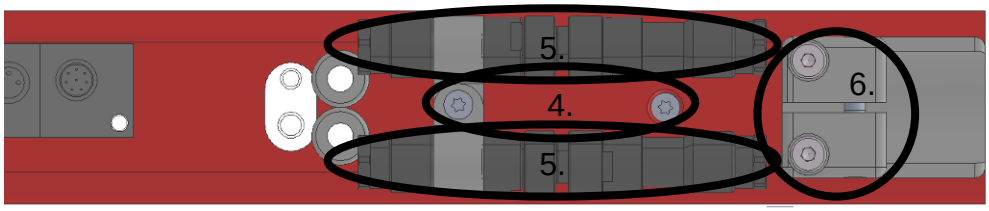
Attention
Repair works may only be executed by qualified personnel.

9.1 *Change Sensors EDM20P Vertical*

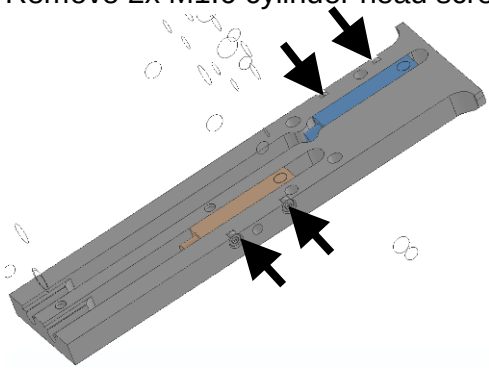
1. Unscrew 4 respectively 6 x M4 countersunk head-Torx- screws (on both sides).
2. Unscrew the air screw connection.
3. Detach the clamping of the hose and push the hose backwards for about 10mm.



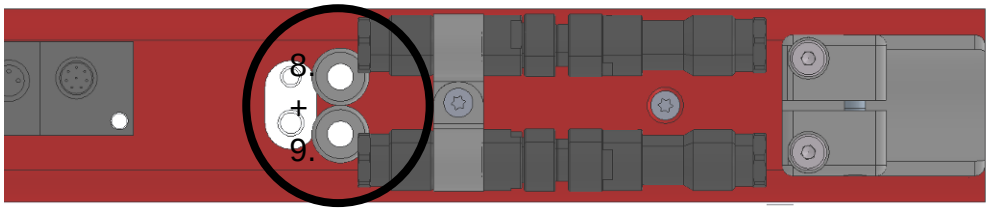
4. Remove 2x M3 screws of the sensor bracket fixing.
5. Disconnect the sensor plug from the coupling.
6. Remove 2x cylinder head screws to the hose bracket fixing.



7. Remove 2x M1.6 cylinder head screws (for each sensor) at the sensor fixing.



8. Put the defective sensor through the cable gland.
9. Put the new sensor through the cable gland.



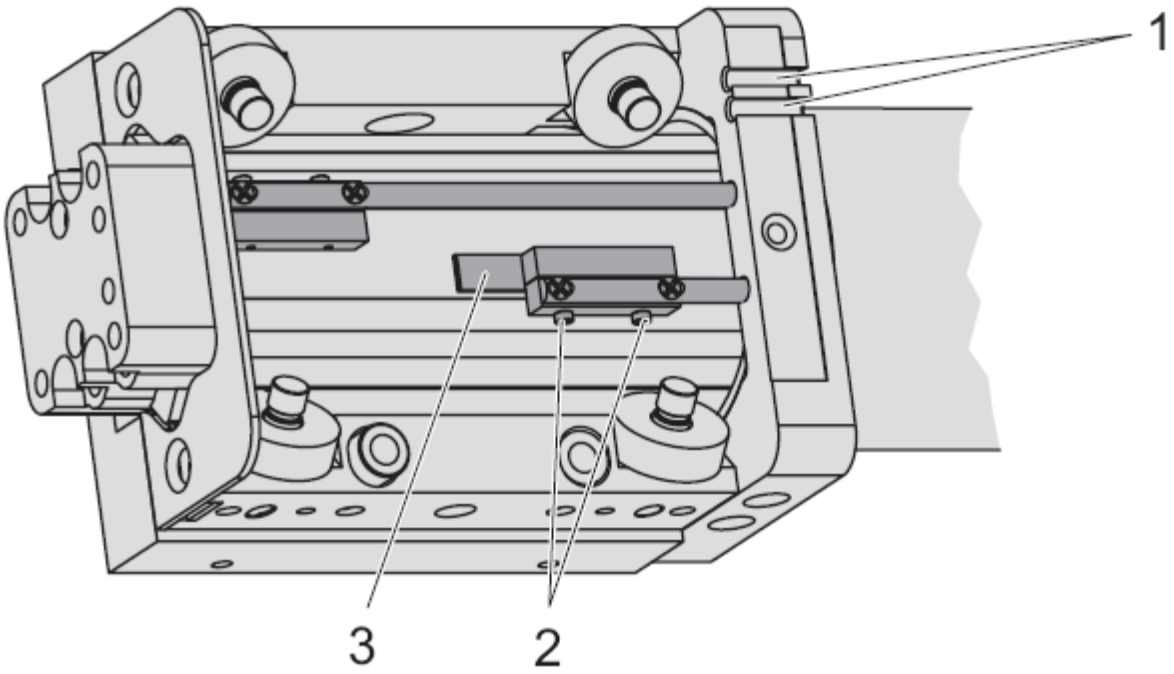
10. Screw the sensor on (see step 7).
11. Connect the sensor plug with the clutches (see step 5).
12. Screw the sensor bracket fixing and hose bracket on (see step 4 + 6).
13. Screw the hood, air screw connection on again (see step 1 + 2).
14. Insert the hose again and clamp it (see step 3).

9.2 *Change of Sensors EDM25*

15. Remove the cover of the module (release 1 x M4 countersunk head-Torx- screw)
16. Remove the allen screws (2) for the sensor fixing (2 x M1.6 x 8 per sensor), release the plug M8 of the sensor from the control block and take out the defective sensor.
17. Fix the new sensor with all screws and adjust it according to the instruction.
18. Press the sensor cable into the provided notch (1), give the cable enough space to set the sensor.
19. Re-fix the cover of the module.

9.3 *Adjustment of Sensor EDM25*

1. Move the module into end position so that the switching flag (3) is placed under the sensor that has to be adjusted.
2. Adjust the switch distance to 0.4 mm between the switching flag and the sensor by means of the feeler gauge.
3. Fix the screw with thread locker (Loctite 243).

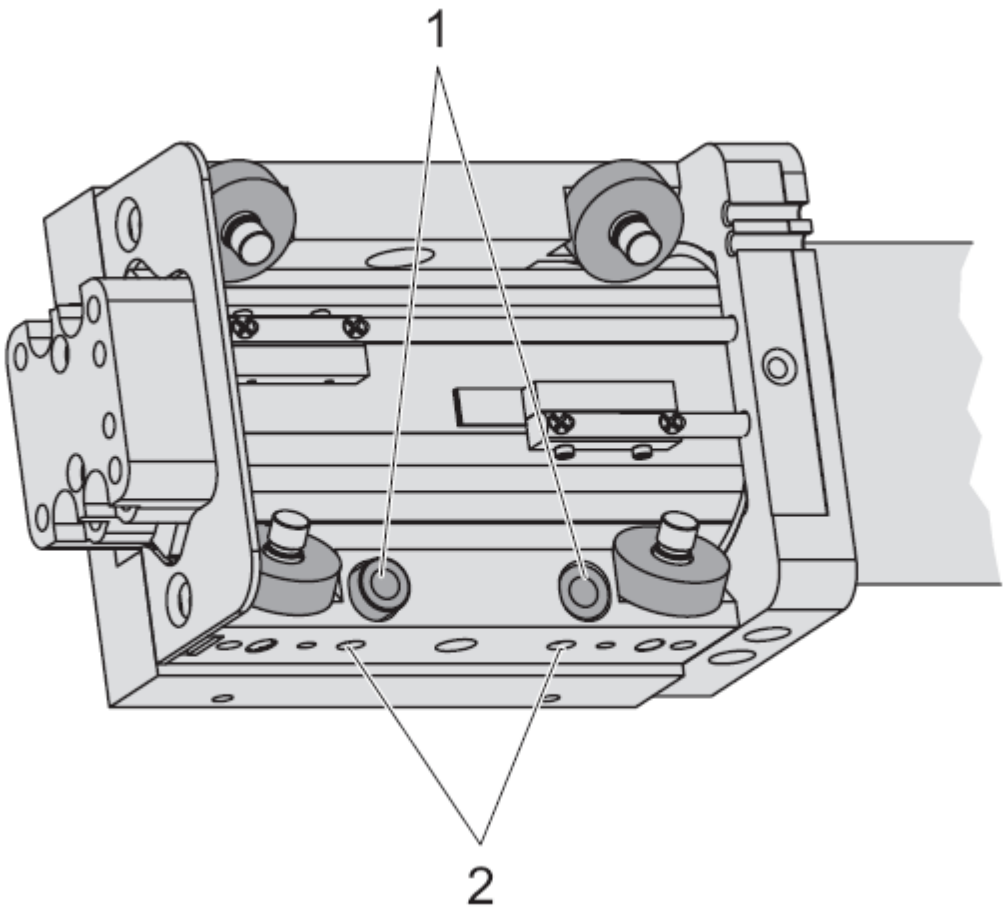


9.4 *Readjust the Guidance EDM25, EDM25EL, EDM25ES*

Due to hard shocks or after a longer running time it might be necessary to readjust the guidance.

.

1. Remove the cover of the module (release 1 x M4 countersunk head-Torx- screw).
2. Release the clamping screws (1) (2 x M6).
3. Tighten the grub screws (2) until you feel resistance, turn further for about 1/4 rotation.
4. Strongly tighten the clamping screws (1) (2 x M6).
5. Check if the casters move with the entire stroke. In case of a too high pre-stressing the contained balls can be noticed during the movement.
6. Re-adjust again if necessary.
7. Re-fix the cover of the module.



10 Components- / Spare Parts Lists

The spare parts of the standard components are enlisted here. Concerning special assemblies, the order numbers on our delivery notes are applicable.

10.1 *Motors Overview*

Axis	Stator	Rotor	Wiper
EDM 20-50EL	PS01-23x80F-HP-R	PL01-12x170/130-HP	wiper gasket EDM2xEL
EDM 20-100EL	PS01-23x160H-HP-R	PL01-12x270/230-HP	wiper gasket EDM2xEL
EDM 20-200EL	PS01-23x160H-HP-R	PL01-12x350/310-HP	wiper gasket EDM2xEL
EDM 20-300EL	PS01-23x160H-HP-R	PL01-12x480/440-HP	wiper gasket EDM2xEL
SM 20-50EL	PS01-23x80F-HP-R	PL01-12x170/130-HP	wiper gasket EDM2xEL
SM 20-100EL	PS01-23x160H-HP-R	PL01-12x270/230-HP	wiper gasket EDM2xEL
SM 20-200EL	PS01-23x160H-HP-R	PL01-12x350/310-HP	wiper gasket EDM2xEL
SM 20-300EL	PS01-23x160H-HP-R	PL01-12x480/440-HP	wiper gasket EDM2xEL
EDM 25-100EL	PS01-23x160H-HP-R	PL01-12x270/230-HP	wiper gasket EDM2xEL
EDM 25-200EL	PS01-23x160H-HP-R	PL01-12x350/310-HP	wiper gasket EDM2xEL
EDM 25-300EL	PS01-23x160H-HP-R	PL01-12x480/440-HP	wiper gasket EDM2xEL
EDM 25-360EL	PS01-23x160H-HP-R	PL01-12x580/540-HP	wiper gasket EDM2xEL
EDM 25-100ES	Faulhaber EC Servo 4490 H 048 B K1155		(none)
EDM 25-200ES	Faulhaber EC Servo 4490 H 048 B K1155		(none)
EDM 25-300ES	Faulhaber EC Servo 4490 H 048 B K1155		(none)
EDM 30-50EL	PS01-37x120F-HP-C	PL01-20x240/180-HP	wiper gasket EDM3xEL
EDM 30-100EL	PS01-37x120F-HP-C	PL01-20x300/240-HP	wiper gasket EDM3xEL
EDM 30-200EL	PS01-37x120F-HP-C	PL01-20x400/340-HP	wiper gasket EDM3xEL
EDM 30-300EL	PS01-37x120F-HP-C	PL01-20x500/440-HP	wiper gasket EDM3xEL
EDM 30-400EL	PS01-37x120F-HP-C	PL01-20x600/540-HP	wiper gasket EDM3xEL
EDM 30-500EL	PS01-37x120F-HP-C	PL01-20x700/640-HP	wiper gasket EDM3xEL

Module	Stator	Rotor	Wiper
PM20-0130 EL	PS01-23x160H-HP-R	PL01-12x420/380-HP	Wiper gask. EDM2xEL
PM20-0190 EL	PS01-23x160H-HP-R	PL01-12x480/440-HP	Wiper gask. EDM2xEL
PM20-0290 EL	PS01-23x160H-HP-R	PL01-12x580/540-HP	Wiper gask. EDM2xEL
PM20-0470 EL	PS01-23x160H-HP-R	PL01-12x760/720-HP	Wiper gask. EDM2xEL
PM20-0560 EL	PS01-23x160H-HP-R	PL01-12x850/810-HP	Wiper gask. EDM2xEL
PM20-0140 EL SL	PS01-23x80F-HP-R	PL01-12x350/310-HP	Wiper gask. EDM2xEL
PM20-0210 EL SL	PS01-23x80F-HP-R	PL01-12x420/380-HP	Wiper gask. EDM2xEL
PM20-0270 EL SL	PS01-23x80F-HP-R	PL01-12x480/440-HP	Wiper gask. EDM2xEL
PM20-0370 EL SL	PS01-23x80F-HP-R	PL01-12x580/540-HP	Wiper gask. EDM2xEL
PM20-0550 EL SL	PS01-23x80F-HP-R	PL01-12x760/720-HP	Wiper gask. EDM2xEL
PM20-0640 EL SL	PS01-23x80F-HP-R	PL01-12x850/810-HP	Wiper gask. EDM2xEL
PM25-90 19E	PS01-37x120F-HP-C	PL01-19x240/160	(none)
PM25-150 19E	PS01-37x120F-HP-C	PL01-19x300/220	(none)
PM25-250 19E	PS01-37x120F-HP-C	PL01-19x395/320	(none)
PM25-350 19E	PS01-37x120F-HP-C	PL01-19x500/420	(none)
PM25-450 19E	PS01-37x120F-HP-C	PL01-19x600/520	(none)
PM25-550 19E	PS01-37x120F-HP-C	PL01-19x700/620	(none)
PM25-650 19E	PS01-37x120F-HP-C	PL01-19x800/720	(none)
PM25-150 20E HP	PS01-37x120F-HP-C	PL01-20x400/340-HP	PA01-37/20-F/-R
PM25-250 20E HP	PS01-37x120F-HP-C	PL01-20x500/440-HP	PA01-37/20-F/-R
PM25-350 20E HP	PS01-37x120F-HP-C	PL01-20x600/540-HP	PA01-37/20-F/-R
PM25-450 20E HP	PS01-37x120F-HP-C	PL01-20x700/640-HP	PA01-37/20-F/-R
PM25-550 20E HP	PS01-37x120F-HP-C	PL01-20x800/740-HP	PA01-37/20-F/-R
PM25-650 20E HP	PS01-37x120F-HP-C	PL01-20x900/840-HP	PA01-37/20-F/-R
PM25-750 20E HP	PS01-37x120F-HP-C	PL01-20x1000/940-HP	PA01-37/20-F/-R
PM25-950 20E HP	PS01-37x120F-HP-C	PL01-20x1200/1140-HP	PA01-37/20-F/-R
PM25-1150 20E HP	PS01-37x120F-HP-C	PL01-20x1400/1340-HP	PA01-37/20-F/-R
PM25-1350 20E HP	PS01-37x120F-HP-C	PL01-20x1600/1540-HP	PA01-37/20-F/-R
PM25-1450 20E HP	PS01-37x120F-HP-C	PL01-20x1600/1540-HP	(none)

Module	Stator	Rotor	Wiper
PM30-170 27E	PS01-48x240F-C	PL01-27x350/270	(none)
PM30-230 27E	PS01-48x240F-C	PL01-27x410/330	(none)
PM30-320 27E	PS01-48x240F-C	PL01-27x500/420	(none)
PM30-440 27E	PS01-48x240F-C	PL01-27x620/540	(none)
PM30-530 27E	PS01-48x240F-C	PL01-27x710/630	(none)
PM30-50 28E	PS01-48x240F-C	PL01-28x410/330	PA01-48/28-F/-R
PM30-150 28E	PS01-48x240F-C	PL01-28x500/420	PA01-48/28-F/-R
PM30-270 28E	PS01-48x240F-C	PL01-28x620/540	PA01-48/28-F/-R
PM30-360 28E	PS01-48x240F-C	PL01-28x710/630	PA01-48/28-F/-R
PM30-450 28E	PS01-48x240F-C	PL01-28x800/720	PA01-48/28-F/-R
PM30-570 28E	PS01-48x240F-C	PL01-28x920/840	PA01-48/28-F/-R
PM30-660 28E	PS01-48x240F-C	PL01-28x1010/930	PA01-48/28-F/-R
PM30-870 28E	PS01-48x240F-C	PL01-28x1220/1140	PA01-48/28-F/-R
PM30-1050 28E	PS01-48x240F-C	PL01-28x1400/1320	PA01-48/28-F/-R
PM30-1260 28E	PS01-48x240F-C	PL01-28x1610/1530	PA01-48/28-F/-R
PM30-1470 28E	PS01-48x240F-C	PL01-28x1820/1740	PA01-48/28-F/-R
PM30-1650 28E	PS01-48x240F-C	PL01-28x2000/1920	PA01-48/28-F/-R
PM30-1820 28E	PS01-48x240F-C	PL01-28x2000/1920	PA01-48/28-F/-R
PM30HP-0200 27E	PS01-48x360F-C	PL01-27x500/420	(none)
PM30HP-0320 27E	PS01-48x360F-C	PL01-27x620/540	(none)
PM30HP-0410 27E	PS01-48x360F-C	PL01-27x710/630	(none)
PM30HP-0150 28E	PS01-48x360F-C	PL01-28x620/540	PA01-48/28-F/-R
PM30HP-0240 28E	PS01-48x360F-C	PL01-28x710/630	PA01-48/28-F/-R
PM30HP-0330 28E	PS01-48x360F-C	PL01-28x800/720	PA01-48/28-F/-R
PM30HP-0450 28E	PS01-48x360F-C	PL01-28x920/840	PA01-48/28-F/-R
PM30HP-0540 28E	PS01-48x360F-C	PL01-28x1010/930	PA01-48/28-F/-R
PM30HP-0750 28E	PS01-48x360F-C	PL01-28x1220/1140	PA01-48/28-F/-R
PM30HP-0930 28E	PS01-48x360F-C	PL01-28x1400/1320	PA01-48/28-F/-R
PM30HP-1140 28E	PS01-48x360F-C	PL01-28x1610/1530	PA01-48/28-F/-R
PM30HP-1350 28E	PS01-48x360F-C	PL01-28x1820/1740	PA01-48/28-F/-R
PM30HP-1530 28E	PS01-48x360F-C	PL01-28x2000/1920	PA01-48/28-F/-R
PM30HP-1700 28E	PS01-48x360F-C	PL01-28x2000/1920	PA01-48/28-F/-R
SE20-E	Faulhaber EC Servo 3242 G 024 B X4 3692		
SE30-E	Faulhaber EC Servo 3564 K 048 B K312 K1155		
SE40-E	Faulhaber EC Servo 4490 H 048 B K1511		

10.2 *Spare Parts for EDM20P*

Designation	Art.no.
Adjusting screw	020.221
Gasket set	020.269
Sensor with angle plug and cable 25 cm long	520.001
Sensor with straight plug and cable 25 cm long	520.007
Pneumatic grease POLYGLUB GLY 151 - AR34-402 (100ml)	540.031

10.3 *Spare Parts for EDM20EL*

Designation	Art.no.
Motor system Stator, rotor, wiper	see chart motors overview
Grease UH1 14-31 (100ml)	540.043

10.4 *Spare Parts for SM20EL*

Designation	Art.no.
Motor system Stator, rotor, wiper	see chart motors overview
Grease UH1 14-31 (100ml)	540.043

10.5 *Spare Parts for EDM30EL*

Designation	Art.no.
Motor system Stator, rotor, wiper	see chart motors overview
Grease UH1 14-31 (100ml)	540.043

10.6 *Spare Parts for EDM25*

Designation	Art.no.
Sensor with angle plug and cable 25 cm long	520.001
Sensor with straight plug and cable 25 cm long	520.007
Caster INA LR606 NPPU	025.079
□earing bracket up with 4 casters	025.082
□earing bracket down with 4 casters	025.083
Adjusting screw	025.045
Gasket set	025.080
Pneumatic grease POLYGLUB GLY 151 - AR34-402 (100ml)	540.031

10.7 *Spare Parts for EDM25EL*

Designation	Art.no.
Caster INA LR606 NPPU	025.079
Bearing bracket up with 4 casters	025.082
Bearing bracket down with 4 casters	025.083
Motor system Stator, rotor, wiper	see chart motors overview
Grease UH1 14-31 (100ml)	540.043

10.8 *Spare Parts for EDM25ES*

Designation	Art.no.
Caster INA LR606 NPPU	025.079
Bearing bracket up with 4 casters	025.082
Bearing bracket down with 4 casters	025.083
Motor 4490H048B-K1155	520.352
Ball screw 12 x 5 for EDM25-100 ES	027.043
Ball screw 12 x 5 for EDM25-200 ES	027.044
Ball screw 12 x 5 for EDM25-300 ES	027.045
Toothed belt short for EDM25 ES	027.053
Grease UH1 14-31 (100ml)	540.043

10.9 *Spare Parts for PM20EL*

Designation	Art.no.
Motor system Stator, rotor, wiper	see chart motors overview
Grease UH1 14-31 (100ml)	540.043

10.10 *Spare Parts for PM25EL/PM30EL*

Designation	Art.no.
Motor system Stator, rotor, wiper	see chart motors overview
Grease UH1 14-31 (100ml)	540.043

10.11 *Spare Parts for SE20*

Designation	Art.no.
Motor	see chart motors overview
Sensor with straight plug and cable 25 cm long	520.007
Sensor cable	520.254
Grease UH1 14-31 (100ml)	540.043
O-ring 17 x 1 NBR 872	510.239
Gear unit HDUC-11-50-2A-R	530.197
Lubrication grease Flexolub A1	540.056

10.12 *Spare Parts for SE30/40*

Designation	Art.no.
Motor	see chart motors overview
Sensor	520.253
Sensor cable	520.254
Grease UH1 14-31 (100ml)	540.043
O-Ring 14,0 x 1,5 NBR 872	510.199

10.13 *Motor Cable*

Designation	Art.no.
Motor cable 2m for EDM20/25 EL	080.240
Motor cable 2m for EDM20/25 EL - suitable for drag chain use	080.238
Motor cable 2m for PM25E - suitable for drag chain use	080.024
Motor cable 4m for EDM20/25 EL	080.235
Motor cable 4m for EDM20/25 EL - suitable for drag chain use	080.218
Motor cable 4m for PM25E - suitable for drag chain use	080.018
Motor cable 4m for PM25E-HP/30E - suitable for drag chain use	080.015
Motor cable 6m for PM25E - suitable for drag chain use	080.026
Motor cable 8m for EDM20/25 EL	080.236
Motor cable 8m for EDM20/25 EL - suitable for drag chain use	080.219
Motor cable 8m for PM25E - suitable for drag chain use	080.207
Motor cable 8m for PM25E-HP/30E - suitable for drag chain use	080.208

10.14 *Axis Control*

Designation		Art.no.
Controller B1100-GP	for CANopen, RS485, Digital IO	080.221
Controller B1100-GP-HC	for CANopen, RS485, Digital IO	080.027
Controller B1100-GP-XC	for CANopen, RS485, Digital IO	080.230
Controller B1100-PP	for Digital IO	080.231
Controller B1100-PP-HC	for Digital IO	080.232
Controller B1100-PP-XC	for Digital IO	080.233
Controller E1100-GP	for CANopen, RS 485, Digital IO	080.250
Controller E1100-GP-HC	for CANopen, RS 485, Digital IO	080.251
Controller E1100-GP-XC	for CANopen, RS 485, Digital IO	080.252
Controller E1100-RS	for RS485	080.016
Controller E1100-RS-HC	for RS485	080.014
Controller E1100-RS-XC	for RS485	080.234
Controller E1130-DP	for Profibus DP	080.020
Controller E1130-DP-HC	for Profibus DP	080.021
Controller E1130-DP-XC	for Profibus DP	080.224
Controller E1250-EC	for EtherCAT	080.243
Controller E1250-PL	for PowerLink	080.239

10.15 *Control Block*

Designation	Art.no.
5/2- directional valve VUVG-S10 Impulse (as of 05-2010)	510.208
5/2- directional valve VUVG-S10 monostable (as of 05-2010)	510.207
5/3- directional valve VUVG-S10 M-closed (as of 05-2010)	510.206
5/3- directional valve VUVG-S10 M-open (as of 05-2010)	510.210
Unlockable check valve	510.216
Throttle / Silencer	510.080
Cable 8-pole, 1.5 m for power strip	520.073
Angle plug 3-pole	520.057
Connection cable EDS20, 10m long 12 pole- highly flexible	080.260
Connection cable EDS20, 5m long 12 pole- highly flexible	080.258
Connection cable EDP standard/maxi, 2 m long	080.111
Connection cable EDP standard/maxi, 5 m long	080.109
Connection cable EDP standard/maxi, 10 m long	080.110
Connection cable EDP standard/maxi, 10 m long - highly flexible	080.107
Connection cable EDP standard/maxi, 2 m o- highly flexible	080.106
Connection cable EDP standard/maxi, 5 m long - highly flexible	080.108
Connection cable EDP standard/maxi, 2 m long	080.111

10.16 *Distance Measurement System*

Designation		Art.no.
Magnetic tape MB100	Pole division 1mm	520.531
Magnetic tape MB500	Pole division 5mm	520.402
Magnetic sensor LE100/1- for save rot. speed	Cable 8m, Sin/Cos 1Vpp	520.532
Magnetic sensor MSK500 for distance measurement system	Cable 8m, resolution 0.001	520.457

10.17 *MagSpring*

Designation		Art.no.
MagSpring rotor ML01-12x130/80-10	Power 11N/40N for EDM20-50 EL	520.438
MagSpring rotor ML01-12x130/80-15	Power 17N/50N for EDM20-50 EL	520.439
MagSpring rotor ML01-12x130/80-20	Power 22N/60N for EDM20-50 EL	520.440
MagSpring rotor ML01-12x210/160-10	Power 11N/40N for EDM2x-100 EL	520.337
MagSpring rotor ML01-12x210/160-15	Power 17N/50N for EDM2x-100 EL	520.315
MagSpring rotor ML01-12x210/160-20	Power 22N/60N for EDM2x-100 EL	520.374
MagSpring rotor ML01-12x290/240-10	Power 11N/40N for EDM2x-200 EL	520.298
MagSpring rotor ML01-12x290/240-15	Power 17N/50N for EDM2x-200 EL	520.361
MagSpring rotor ML01-12x290/240-20	Power 22N/60N for EDM2x-200 EL	520.360
MagSpring rotor ML01-12x370/320-10	Power 11N/40N for EDM2x-300 EL	520.339
MagSpring rotor ML01-12x370/320-15	Power 17N/50N for EDM2x-300 EL	520.375
MagSpring rotor ML01-12x370/320-20	Power 22N/60N for EDM2x-300 EL	520.376
MagSpring stator MS01-20x140/130	Power 11-22N for EDM2x-100 EL	520.305
MagSpring stator MS01-20x220/210	Power 11-22N for EDM2x-200 EL	520.299
MagSpring stator MS01-20x300/290	Power 11-22N for EDM2x-300 EL	520.340
MagSpring stator MS01-20x60/50	Power 11-22N for EDM20-50 EL	520.437
MagSpring stator MS01-37x155/125	Power 40-60N for EDM2x-100 EL	520.314
MagSpring stator MS01-37x230/200	Power 40-60N for EDM2x-200 EL	520.491

11 Disposal Hints

Products

- Products that mainly consist of metal (axes, modules, adapter plates etc.) must be disposed according to the national laws concerning metal recycling.
- Electronic products (controllers, controls etc.) must be disposed according to the national laws concerning electro-/ electronic waste.

Packaging

Cardboards, papers or PM films are the mainly used packaging material.
These are materials which can be supplied to worldwide recycling processes.
If the materials are sent back to us DDU, e.p.s will take them back free of charge and recycle them in due form.

12 Assembly Instruction according to Annex VI (EC-Directive 006/42/EC)

Assembly Instruction according to Annex VI (EC Directive 2006/42/EC)

Concerning the assembly of the incomplete machine

EDP mini
EDP standard
EDP maxi
EDP mini XYZ
EDP standard XYZ
EDP maxi XYZ
EDP Portal standard
EDP Portal maxi
EDP area gantry

EDM 20P
EDM 20EL
SM 20EL
EDM 25
EDM 25EL
EDM 25ES
EDM 30EL
PM 20/25/30
SE 20/30/40 E
EDS standard/maxi
EDS 20 / ESW 20

the following conditions must be fulfilled so that it can be mounted with other parts to a complete machine orderly and without any infringement of safety and health of persons:

- Regard the safety guidelines in the risk assessment.
- Read, understand and obey the operation instructions completely.
- The assembly may only be executed by qualified specialized personnel.

13 Declaration of Incorporation for Incomplete Machines (EC-Directive 2006/42/EC)

Declaration of Incorporation for incomplete machines (EC-Directive 2006/42/EC)

The manufacturer: e.p.s. elektropneumatic e Systeme GmbH
Gewerbestrasse 11
D-78739 Hardt

herewith declares that the following products:

EDP mini	EDM 20P
EDP standard	EDM 20EL
EDP maxi	SM 20EL
EDP mini XYZ	EDM 25
EDP standard XYZ	EDM 25EL
EDP maxi XYZ	EDM 25ES
EDP Portal standard	EDM 30EL
EDP Portal maxi	PM 20/25/30
EDP area gantry	SE 20/30/40 E
	EDS standard/maxi
	EDS 20 / ESW 20

meet the following general requirements of the directive **machines (2006/42/EC)**:
Annex I, Articles 1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.4 and 1.5.1.

The incomplete machine furthermore meets all regulations of guidelines concerning electrical equipment (2006/95/EC) and electro magnetic compatibility (2004/108/EC).

The incomplete machine may only be put into operation when it has been determined that the machine which shall be mounted into the incomplete machine meets the regulations of the directive machines (2006/42/EG).

The manufacturer commits to send the special documentation about the incomplete machine to national authorities electronically on demand.
The special technical documents belonging to the machine according to Annex VII Part B have been prepared.

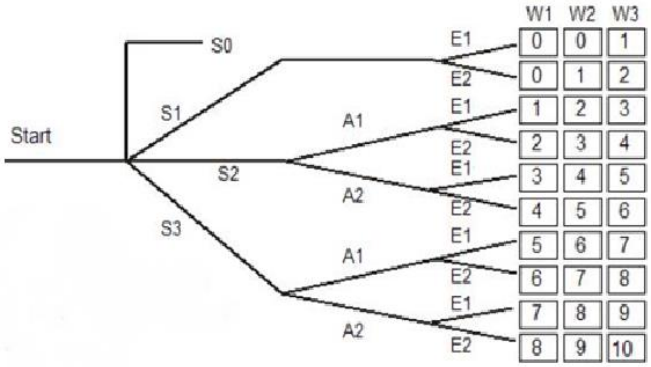
Name of the authorized representative for documentation: Bernhard Moosmann
Address of the authorized representative for documentation: Gewerbestraße 11 - 78739 Hardt

21.07.14	Dipl Ing FH Bernhard Moosmann, Managing Director	
Date	Signatory and particulars about the signatory	Unterschrift

14 Risk Assessment (EG Directive 2006/42/EC)

Applied methods for the risk assessment

Applied diagram for the risk assessment:



Extent of losses

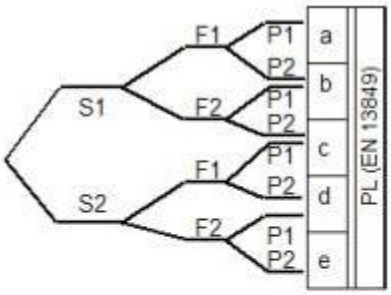
SO no danger
S1 minor injury (reversible)
S2 serious injury (irreversible)
S3 death

Duration of stay in dangerous area
A1 seldom to sometimes
A2 often to constantly

Possibilities to recognize and avoid the danger
E1 possible under certain conditions
E2 nearly impossible

Probability of occurrence
W1 small (unlikely)
W2 middle (will probably happen several times)
W3 big (will happen often)

Applied diagram according to EN 13849 for the determination of the required Performance-Level (PL):



Severity of the injury
S1: minor injury
S2: death or serious injury

Frequency and duration of stay
F1: seldom to sometimes
F2: often to constantly

Possibility to avoid dangers
P1: possible under certain conditions
P2: nearly impossible
PL: Performance level

Specification of the machine limits			
1.	**Use limits**		
	Intended use	Assembly, mounting of diverted component products	
	Field of application of the machine		
	Trade	Yes	
	Industry	Yes	
	Household	No	
	User Groups	**Task**	**Qualification/ Impairments**
	Professional personnel	Maintenance, commissioning, operation	Professional training
	Apprentices	Operation	Operatives
	Operating personnel	Operation	Experienced/ operative

2.	**Spacial Limits**	
	Description of the machine / of the system	See Description of the systems
	Interfaces for energy supply	Electrical energy supply Pneumatic energy supply
3.	**Temporal Limits**	
	Intended working life	10 years
	Recommended maintenance intervals	See **Fehler! Verweisquelle konnte nicht gefunden werden.**
4.	**Further Limits**	
	Highest/lowest environmental temperatures	0-50°C
	Needed level of cleanness	No special requirements
	Materials and characteristics of processed materials	No special requirements

Identification of Dangers					
Pos.	**Phase of Life**	**Description of Danger**	**Risk Assessment**	**Measurements to minimize Risks**	**PL erf.**
1	Transport	Danger due to improper transport of the machine	S = S2 A = A1 E = E1 W = W1 Erg.= 1	Total weight and correct transport possibilities in operation instruction have to be regarded.	--
2	Operation, maintenance, repair	Electrical danger, direct or indirect contact with parts under voltage if defects of electrical components occur	S = S3 A = A1 E = E1 W = W1 Erg.= 5	1. Electrical equipment according to EN 60204 2. Assembly and maintenance of the electrical equipment may only be executed by specialized personnel. 3. Maintenance and repair works may only be executed under conditions free of voltage and compressed air.	S = S2 F = F1 P = P1 PL = c
3	Operation, maintenance, repair	Pacemakers can be disturbed by the permanent magnet.	S = S3 A = A1 E = E1 W = W1 Erg.= 5	People with pacemakers must keep a distance of at least 0.2m to the module.	--

Pos.	Phase of Life	Description of Danger	Risk Assessment	Measurements to minimize Risks	PL erf.
4	Maintenance, commissioning	Contusion of extremities, bruises, fractures in case of reaching into the traversing range of the device when the protecting door is open.	S = S2 A = A2 E = E1 W = W2 Erg.= 6	1. The compressed air supply must be disconnected safely. 2. During the use of the controller E11x0/E12x0 (not E1100-GP), the „Safety Voltage Enable“ entrance (X4.12) must be disconnected or the power supply(72V) at the primary side must be disconnected from the mains safely. 3. During the use of the controller B1100 or E1100-GP the power supply(72V) at the primary side must be disconnected from the mains safely 4. Concerning linear motor axis (besides PM30 and PM30-HP) by safe supervision of the reduced setup speed!!! Regard special documentation!!! Additionally it has to be checked by specialized personnel that all components are fixed correctly and there is no manipulation.	S = S2 F = F1 P = P1 PL = c

Pos.	Phase of Life	Description of Danger	Risk Assessment	Measurements to minimize Risks	PL erf.
5	Operation	Contusion of extremities, bruises, fractures due to reaching into the traversing range of the moving device.	S = S2 A = A2 E = E1 W = W2 Erg.= 6	Operation of the device behind a protective housing so that reaching into the traversing range is impossible.	S = S2 F = F1 P = P1 PL = c
6	Operation, maintenance, repair	Burnings of the skin due to surface temperatures up to 60°C.	S = S1 E = E1 W = W2 Erg.= 0	1. Avoid direct contact when the device has been in operation. 2. Allow the device to cool down before maintenance works or protect the skin accordingly (gloves, long clothes …)	--

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